

S/M No. : G370A0P001

Service Manual

Microwave Oven

Model : KOG-370A0P
KOG-390A0P

DAEWOO

DAEWOO ELECTRONICS CO., LTD

<http://svc.dwe.co.kr>

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PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- (a) Do not operate or allow the oven to be operated with the door open.
- (b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) Interlock operation, (2) Proper door closing, (3) Seal and sealing surfaces (arcing, wear, and other damage), (4) Damage to or loosening of hinges and latches, (5) Evidence of dropping or abuse.
- (c) Before turning on power to the microwave oven for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- (d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- (e) A microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

TABLE OF CONTENTS

SAFETY AND PRECAUTIONS	2
1. FOR SAFE OPERATION	2
2. FOR SAFE SERVICE PROCEDURES	2
SPECIFICATIONS	3
EXTERNAL VIEW.....	4
1. OUTER DIMENSION.....	4
2. FEATURE DIAGRAM	5
3. CONTROL PANEL	6
INSTALLATION	7
OPERATIONS AND FUNCTIONS.....	8
DISASSEMBLY AND ASSEMBLY.....	9
INTERLOCK MECHANISM AND ADJUSTMENT	18
TROUBLE SHOOTING GUIDE	19
MEASUREMENT AND TEST	23
1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT	23
2. MICROWAVE RADIATION TEST	24
3. COMPONENT TEST PROCEDURE	25
WIRING DIAGRAM.....	26
PRINTED CIRCUIT BOARD.....	27
1. CIRCUIT CHECK PROCEDURE	27
2. PCB CIRCUIT DIAGRAM.....	30
3. P.C.B. LOCATION NO.	31
EXPLODED VIEW AND PARTS LIST.....	33
1. DOOR ASSEMBLY	33
2. CONTROL PANEL ASSEMBLY	33
3. TOTAL ASSEMBLY	33

SAFETY AND PRECAUTIONS

1. FOR SAFE OPERATION

Damage that allows the microwave energy (that cooks or heats the food) to escape will result in poor cooking and may cause serious bodily injury to the operator.

IF ANY OF THE FOLLOWING CONDITIONS EXIST, OPERATOR MUST NOT USE THE APPLIANCE.

(Only a trained service personnel should make repairs.)

- 1) A broken door hinge.
- 2) A broken door viewing screen.
- 3) A broken front panel, oven cavity.
- 4) A loosened door lock.
- 5) A broken door lock.

The door gasket plate and oven cavity surface should be kept clean.

No grease, soil or spatter should be allowed to build up on these surfaces or inside the oven.

DO NOT ATTEMPT TO OPERATE THIS APPLIANCE WITH THE DOOR OPEN. The microwave oven has concealed switches to make sure the power is turned off when the door is opened. Do not attempt to defeat them.

DO NOT ATTEMPT TO SERVICE THIS APPLIANCE UNTIL YOU HAVE READ THIS SERVICE MANUAL.

2. FOR SAFE SERVICE PROCEDURES

- 1) If the oven is operative prior to servicing, a microwave emission check should be performed prior to servicing the oven.
- 2) If any certified oven unit is found to servicing, a microwave emission check should be performed prior to servicing the oven.
 - (a) inform the manufacturer, importer or assembler,
 - (b) repair the unit at no cost to the owner,
 - (c) attempt to ascertain the cause of the excessive leakage,
 - (d) tell the owner of the unit not to use the unit until the oven has been brought into compliance.
- 3) If the oven operates with the door open, the service person should tell the user not to operate the oven and contact the manufacturer immediately.

IMPORTANT

The wire in this mains lead coloured in accordance with the following code.

Green-and-yellow : Earth
Blue : Neutral
Brown : Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter 'E', earth symbol or coloured green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter 'N' or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter 'L' or coloured red.

NOTE

This oven is designed for counter-top use only.

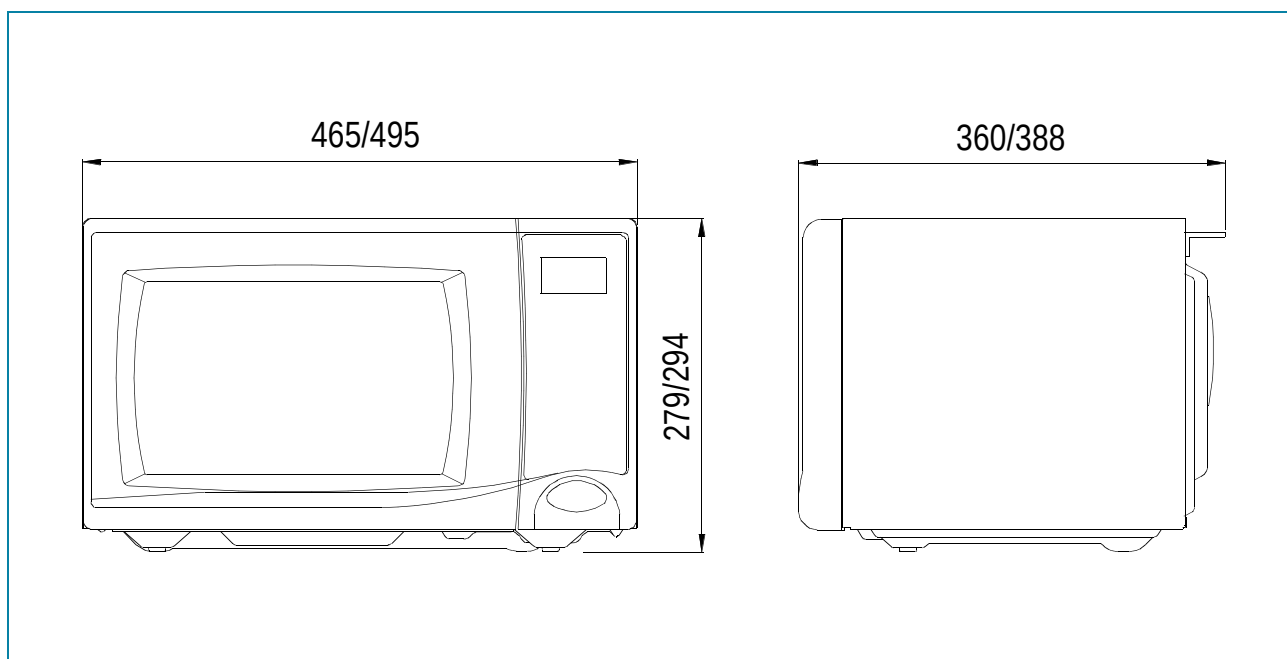
SPECIFICATIONS

MODEL		KOG-370A	KOG-390A
POWER SUPPLY		220V,60Hz, SINGLE PHASE WITH EARTHING	
POWER CONSUMPTION	MICROWAVE	1200W	1300W
	GRILL	1050W	1050W
	COMBINATION	2200W	2350W
MICROWAVE ENERGY OUTPUT		800W	900W
MICROWAVE FREQUENCY		2450MHz	
OUTSIDE DIMENSIONS (W X H X D)		465 x 279 x 360mm (18.3 x 11.0 x 14.2 in.)	495 x 294 x 388mm (19.5 x 11.6 x 15.3 in.)
CAVITY DIMENSIONS (W X H X D)		290 x 220 x 306 mm (11.4 x 8.7 x 12.0 in.)	320 x 244 x 338mm (12.6 x 9.6 x 13.3 in.)
NET WEIGHT		APPROX. 13.7Kg (30.2lbs.)	APPROX. 15.8Kg (34.9lbs.)
TIMER		59 min. 90 sec.	
FUNCTION SELECTIONS		MICROWAVE	
POWER SELECTIONS		10 LEVELS	
CAVITY VOLUME		0.7 Cu.Ft.	0.9 Cu.Ft.

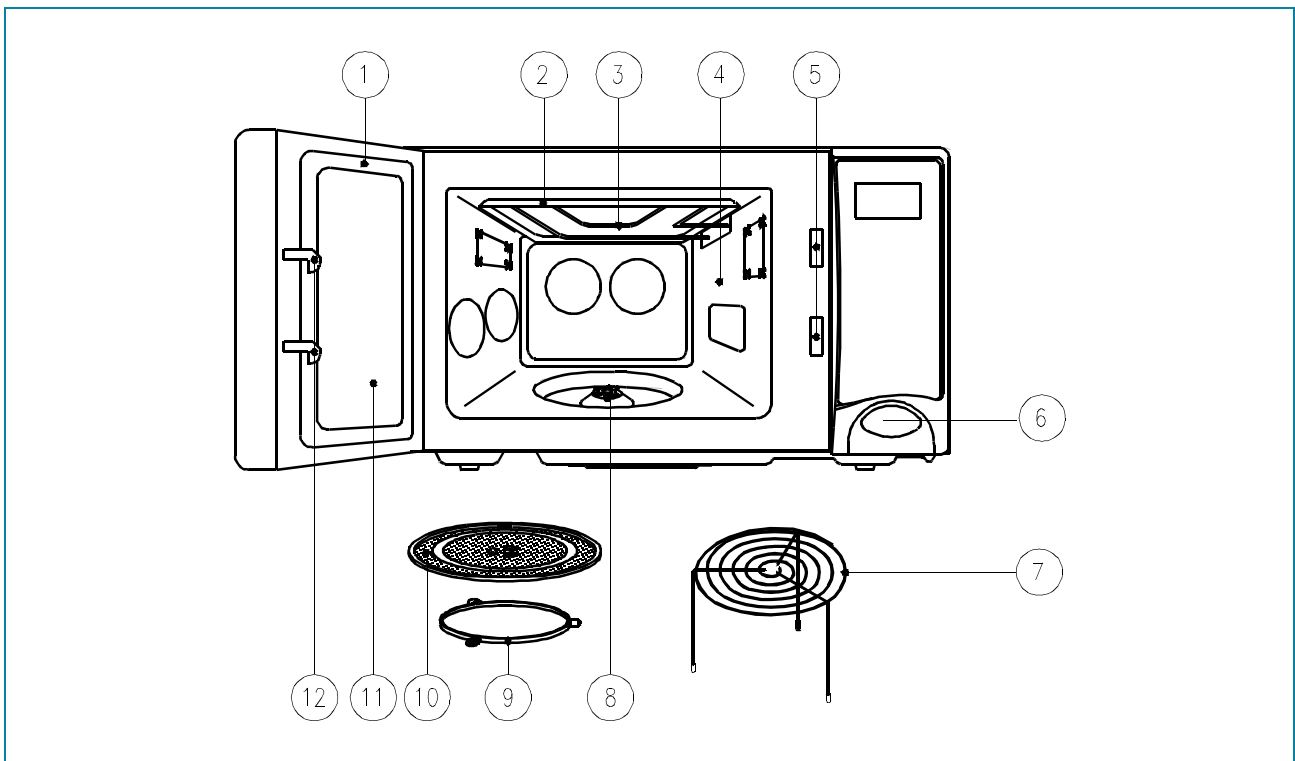
⚠ SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

EXTERNAL VIEW

1. OUTER DIMENSION



2. FEATURE DIAGRAM



1. DOOR SEAL - Door seal maintains the microwave energy within the oven cavity and prevents microwave leakage.

2. REFLECTOR (Insulator Heater)

3. HEATING ELEMENT

4. OVEN CAVITY

5. SEFETY INTERLOCK SYSTEM

6. DOOR RELEASE BUTTON - By pushing this button the latch system cut off all circuits and stops the oven before the door is opened.

7. METAL RACK

8. COUPLER - This fits over the shaft in the center of the ovens cavity floor. This is to remain in the oven for all cooking.

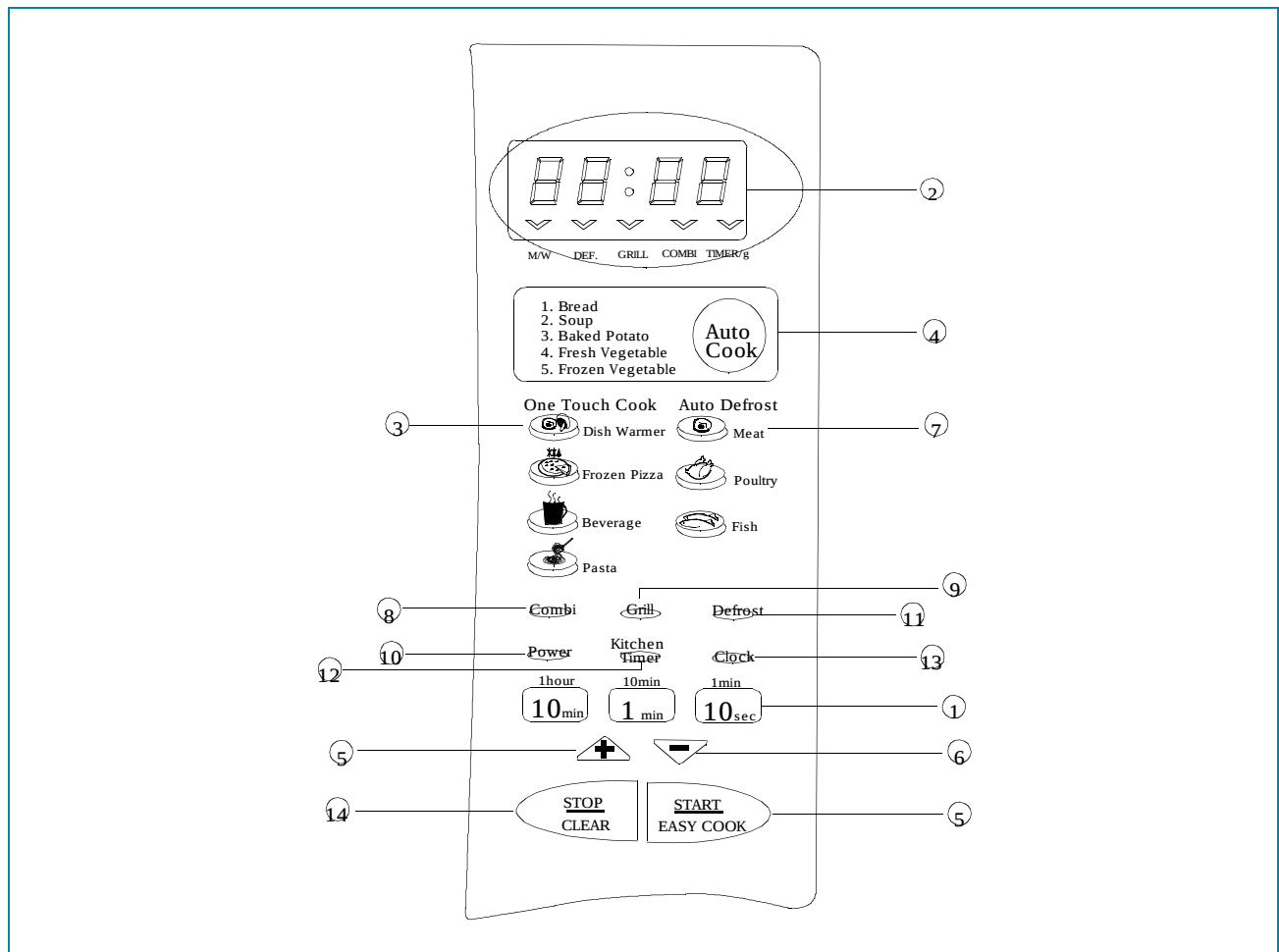
9. ROLLER GUIDE - This must always be used for cooking together with the glass cooking tray.

10. GLASS COOKING TRAY - Made of special heat resistant glass. Food in a proper receptacle is placed on this tray for cooking.

11. DOOR VIEWING SCREEN - Allows viewing of food. The screen is designed so that light can pass through, but not the microwave.

12. DOOR HOOK - When the door is closed, it will automatically shut off. If the door is opened while the oven is operating, the magnetron will automatically shut off.

3. CONTROL PANEL



- 1. TIME SET PAD** - Used to set the cooking time and the present time.
- 2. DISPLAY** - Cooking time, power level, indicators and present time are displayed.
- 3. ONE TOUCH** - Used to cook or reheat specific quantities of food.
- 4. AUTO COOK** - Used to cook or reheat.
- 5. MORE** - Used to add time to cooking.
- 6. LESS** - Used to remove time from cooking.
- 7. AUTO DEFROST** - Used to defrost foods.(for weight)
- 8. COMBI** - Used to cook COMBI.
- 9. GRILL** - Used to cook GRILL
- 10. POWER** - Used to set power level.
- 11. DEFROST** - Used to defrost foods. (for time)
- 12. KITCHEN TIMER** - Used as a minute timer, to delay the start of cooking, or to set a holding time after cooking.
- 13. CLOCK** - Used to set clock.
- 14. STOP/CLEAR** - Used to stop the oven operation or to delete the cooking data.
- 15. START/EASY COOK** - Used to start the oven and also used to set a reheat time.

INSTALLATION

1. Steady, flat location

This microwave oven should be set on a steady, flat surface.
This microwave oven is designed for counter top use only.

2. Leave space behind and side

All air vents should be kept a clearance. If all vents are covered during operation, the oven may overheat and, eventually, cause failure.

3. Away from radio and TV sets

Poor television reception and radio interference may result if the oven is located close to a TV, radio, antenna or feeder and so on.
Position the oven as far from them as possible.

4. Away from heating appliances and water taps

Keep the oven away from hot air, steam or splash when choosing a place to position it, or the insulation might be adversely affected and breakdowns occur.

5. Power supply

- ⚠ Check your local power source.
This microwave oven requires a current of approximately 11 amperes, 220 Volts, 60 Hz.
- ⚠ Power supply cord is about 0.8 meters long.
- ⚠ The voltage used must be the same as specified on this oven. Using a higher voltage may result in a fire or other accident causing oven damage. Using low voltage will cause slow cooking. We are not responsible for damage resulting from use of this oven with a voltage of ampere fuse other than those specified.
- ⚠ This appliance is supplied with cable of special type, which, if damaged, must be repaired with cable of same type.
Such a cable can be purchased from DAEWO and must be installed by a Qualified Person.

6. Examine the oven after unpacking for any damage such as:

A misaligned door, broken door or a dent in cavity.
If any of the above are visible, DO NOT INSTALL, and notify dealer immediately.

7. Do not operate the oven if it is colder than room temperature

(This may occur during delivery in cold weather.) Allow the oven to become room temperature before operating.

EARTHING INSTRUCTIONS

This appliance must be earthed. In the event of an electrical short circuit, earthing reduces the risk of the electric shock by providing an escape wire for the electric current. This appliance is equipped with a cord having a earthing wire with a earthing plug. The plug must be plugged into an outlet that is properly installed and earthed.

WARNING

Improper use of the earthing plug can result in a risk of electric shock. Consult a qualified electrician or serviceman if the earthing instructions are not completely understood, or if doubt exists as to whether the appliance is properly earthed, and either : If it is necessary to use an extension cord, use only a 3-wire extension cord that has a 3-blade earthing plug, and a 3-slot receptacle that will accept the plug on the appliance. The marked rating of the extension cord should be equal to or greater than the electrical rating of the appliance, or Do not use an extension cord.

OPERATIONS AND FUNCTIONS

1. Connect the main lead to an electrical outlet.
2. After placing the food in a suitable container, open the oven door and put it on the glass tray. The glass tray must always be in place during cooking.
3. Close the door securely.
4. When the oven door is opened, the light turns off.
5. The oven door can be opened at any time during operation by touching the door release button on the control panel.
The oven will automatically shut off. To restart the oven, close the door and then touch START.
6. Each time a pad is touched, a BEEP will sound to acknowledge the touch.
7. The oven automatically cook on full power unless set to a lower power level.
8. The display will show :0 when the oven is plugged in.
9. Time clock returns to the present time when the cooking time ends.
10. When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information retained.
To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during the oven operation, all information is retained.
11. If the START pad is touched and the oven does not operate, check the area between the door and door is closed securely. The oven will not start cooking under the door is completely closed or the program has been reset.
12. When using the GRILL or COMBI mode ;
 - ⚠ Do not open the door so often, the temperature inside the oven decrease and the cooking may not be completed in setting time.
 - ⚠ Never touch the oven window and metal interior of the oven when taking food in and out, because the temperature inside the oven and door is very high.
 - ⚠ When using these modes, be careful as the tray will be hot to touch, use oven gloves or pot holders while handling tray.

Make sure the oven is properly installed and plugged into the electrical outlet.

Wattage output chart

The power level is set by pressing the Power pad. The chart shows the display, the power level and the percentage of power.

Touch Power pad.	Power level (Display)	Approximate Percentage of Power
Once	P-HI	100 %
Twice	P-90	90 %
3 times	P-80	80 %
4 times	P-70	70 %
5 times	P-60	60 %
6 times	P-50	50 %
7 times	P-40	40 %
8 times	P-30	30 %
9 times	P-20	20 %
10 times	P-10	10 %
11 times	P-00	0 %

DISASSEMBLY AND ASSEMBLY

Cautions to be observed when trouble shooting

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. It is completely safety during normal operation. However, carelessness in servicing the oven can result in an electric shock or possible danger from a short circuit. You are asked to observe the following precautions carefully.

1. Always remove the power plug from the outlet before servicing.
2. Use an insulated screwdriver and ware rubber gloves when servicing the high voltage side.
3. Discharge the high voltage capacitor before touching any oven components or wiring.

(1) Check the earthed.

Do not operate on a two-wire extension cord.

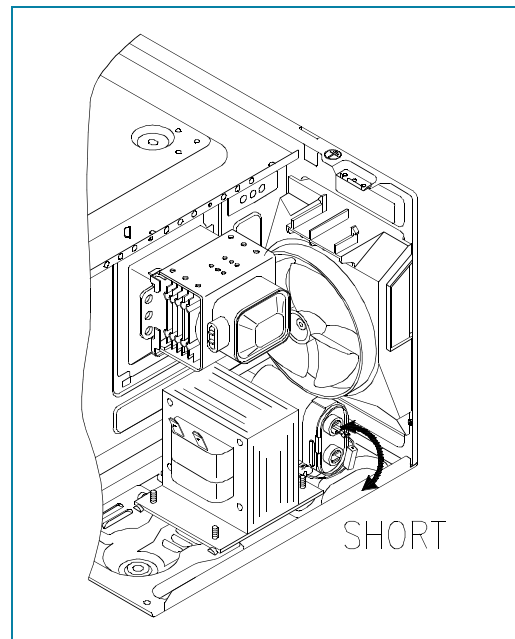
The microwave oven is designed to be used with earthed.

It is imperative, therefore, to makes sure it is earthed properly before beginning repair work.

(2) Warning about the electric charge in the high voltage capacitor.

For about 30 seconds after the operation stopped and electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and the negative high terminal of the high voltage capacitor, by using a properly insulated screwdriver to discharge.

4. When the 15A fuse is blown out due to the operation of the monitor switch; replace primary interlock switch, secondary interlock switch and interlock monitor switch.
5. After repair or replacement of parts, make sure that the screws are properly tightened, and all electrical connections are tightened.
6. Do not operate without cabinet.



CAUTION

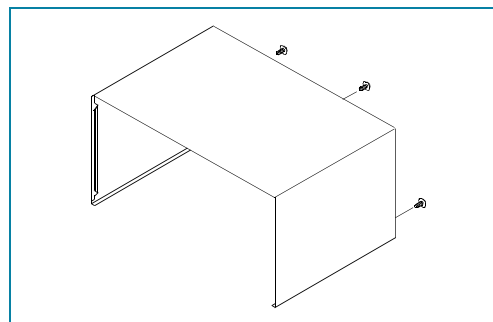
Service personnel should remove their watches whenever working close to or replacing the magnetron.

WARNING

When servicing the appliance, need a care of touching or replacing high potential parts because of electrical shock or exposing microwave. These parts are as follows - HV Transformer, Magnetron, HV Capacitor, HV Diode. HV Fuse.

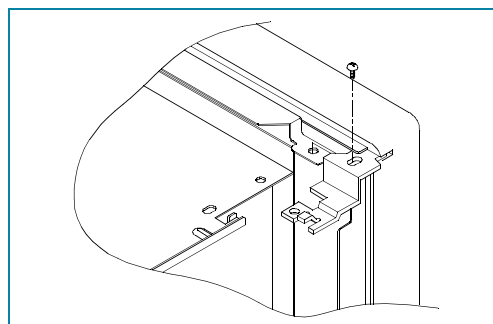
1. To remove cabinet

- 1) Remove three screws on cabinet back.
- 2) Push the cabinet backward.



2. To remove door assembly

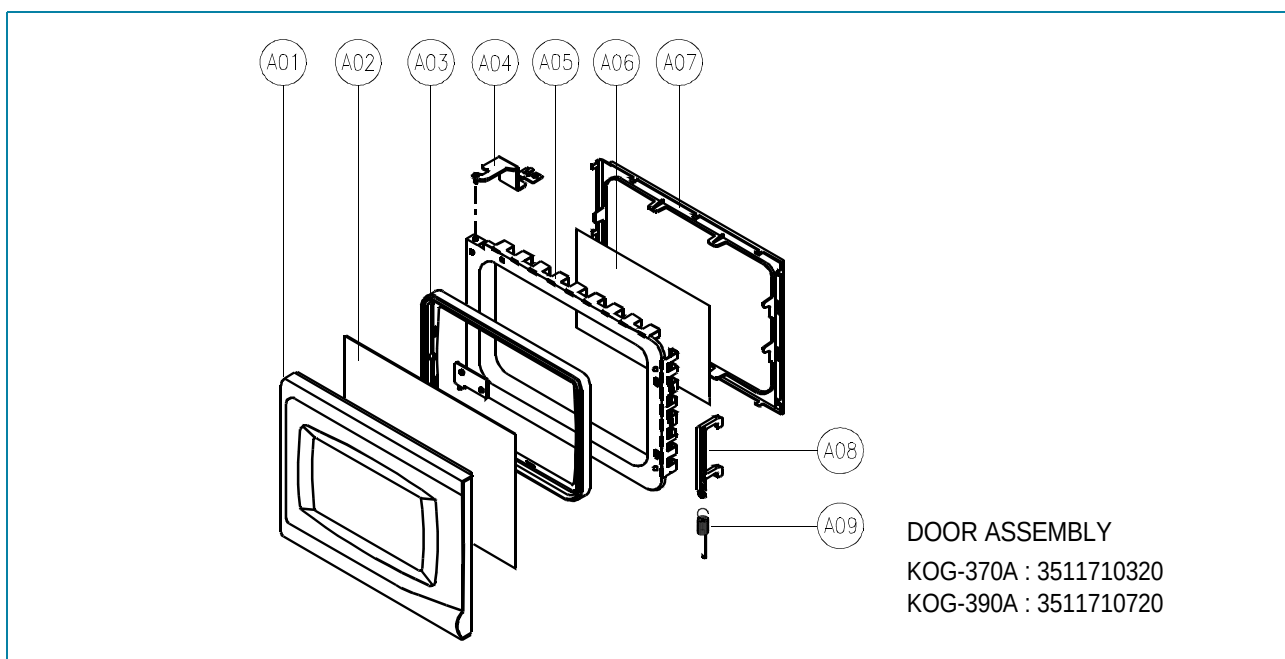
- 1) Remove a screw which secure the stopper hinge top.
- 2) Remove the door assembly from top plate of cavity.
- 3) Reverse the above for reassembly.



NOTE

After replacing the door assembly, perform a check of correct alignment with the hinge and cavity front plate.

3. To remove door parts.



(1) KOG-370A

REF. NO	PART CODE	PART NAME	DESCRIPTION	QTY	REMARK
A01	3512203810	FRAME DOOR	ABS XR-401 H-2938	1	
A02	3517003050	BARRIER-SCREEN*O	ACRYL	1	
A03	3515304610	SUPPORTER BARR-S*O	PP	1	
A04	3515204100	STOPPER HINGE *T AS	KOR-63150S	1	
A05	3511705500	DOOR WELD AS	KOR-61150S	1	
A06	3517002800	BARRIER-SCREEN *I	POLYESTER T0.1	1	
A07	3512300200	GASKET DOOR	PP	1	
A08	3513100700	HOOK	POM	1	
A09	3515101300	SPRING HOOK	PW1	1	

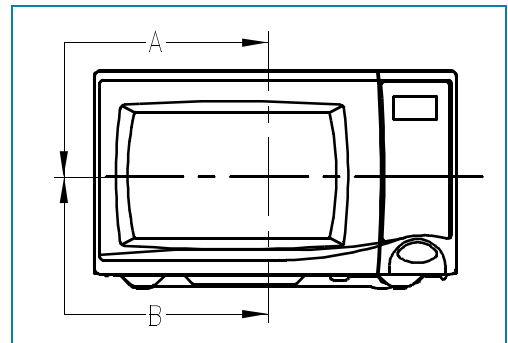
(2) KOG-390A

REF. NO	PART CODE	PART NAME	DESCRIPTION	QTY	REMARK
A01	3512204110	FRAME DOOR	ABS XR-401 H-2938	1	
A02	3517003150	BARRIER-SCREEN*O	ACRYL	1	
A03	3515304410	SUPPORTER BARR-S*O	PP	1	
A04	3515204100	STOPPER HINGE *T AS	KOR-63150S	1	
A05	3511705620	DOOR WELD AS	KOR-81250S	1	
A06	3517002900	BARRIER-SCREEN *I	POLYESTER T0.1	1	
A07	3512300400	GASKET DOOR	PP	1	
A08	3513100700	HOOK	POM	1	
A09	3515101300	SPRING HOOK	PW1	1	

- 1) Remove the gasket door from door weld as.
- 2) Remove the barrier screen inner from door weld as.
- 3) Remove the door frame from door weld as.
- 4) Remove the stopper hinge top from door weld as.
- 5) Remove the spring and the hook.
- 6) Remove the supporter barrier screen outer from door frame.
- 7) Remove the barrier screen outer from door frame.
- 8) Reverse the above steps for reassembly.

4. Method to reduce the gap between the door seal and the oven front surface.

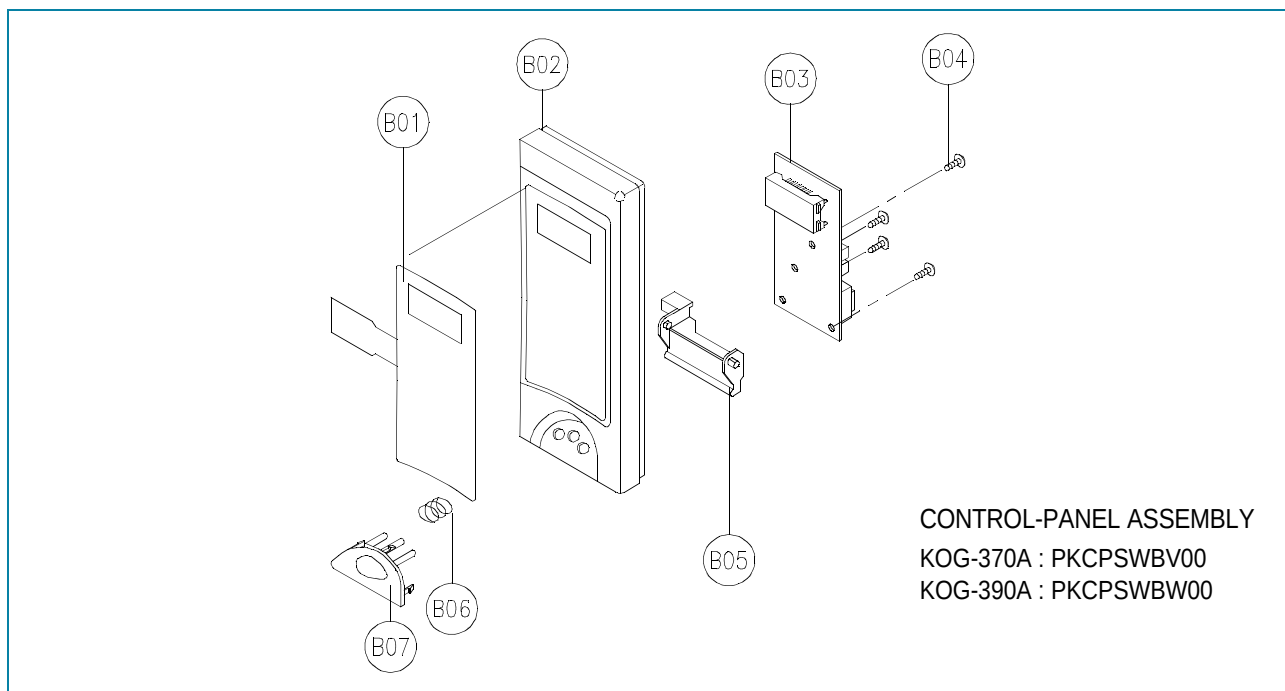
- 1) To reduce gap located on part 'A':
 - ☞ Loosen a screw on stopper hinge top, and then push the door to contact the door seal to oven front surface.
 - ☞ Tighten a screw.
- 2) To reduce gap located on part 'B':
 - ☞ Loosen two screws on stopper hinge under, and then push the door to contact the door seal to oven front surface.
 - ☞ Tighten two screws.



NOTE

A small gap may be acceptable if the microwave leakage does not exceed $4\text{mW}/\text{cm}^2$.

5. To remove control panel parts.



(1) KOG-370A

REF.NO	PART CODE	PART NAME	DESCRIPTION	QTY	REMARK
B01	3518521620	SWITCH MEMBRANE	KOG-370A0S	1	
B02	3516719410	CONTROL-PANEL	ABS XR-401 H-2938	1	
B03	PKMPMSBT00	PCB MAIN AS	KOG-371G0S	1	
B04	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	4	
B05	3513702710	LEVER DOOR OPEN	ABS XR-401 H-2938	1	
B06	441G430171	SPRING BUTTON	SWP DIA0.7	1	
B07	3516906910	BUTTON DOOR OPEN	ABS XR-401 H-2938	1	

(2)KOG-390A

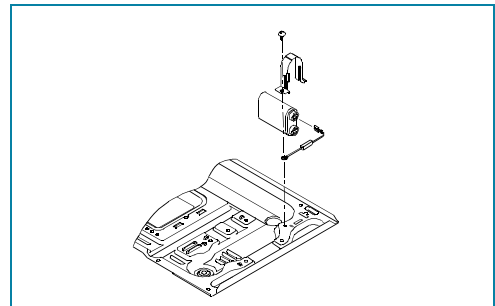
REF.NO	PART CODE	PART NAME	DESCRIPTION	QTY	REMARK
B01	3518521720	SWITCH MEMBRANE	KOG-390A0S	1	
B02	3516720210	CONTROL-PANEL	ABS XR-401 H-2938	1	
B03	PKMPMSBW00	PCB MAIN AS	KOG-390A0S	1	
B04	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	4	
B05	3513702710	LEVER DOOR OPEN	ABS XR-401 H-2938	1	
B06	441G430171	SPRING BUTTON	SWP DIA0.7	1	
B07	3516906910	BUTTON DOOR OPEN	ABS XR-401 H-2938	1	

DISASSEMBLY AND ASSEMBLY

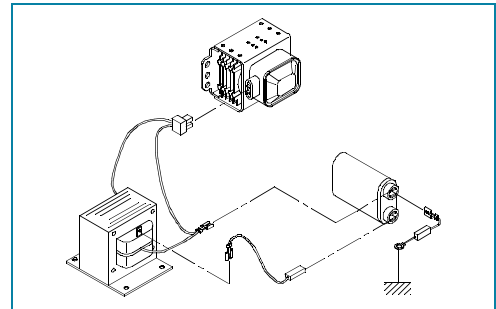
- 1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
- 2) Remove the door open lever from the control panel.
- 3) Remove four screws which secure the PCB assembly to control panel.
- 4) Disconnect membrane tail from the connector of the PCB assembly.
- 5) Detach membrane from the control panel.
- 6) Remove door open button and button spring from the control panel.
- 7) Reverse the above steps for reassembly.

6. To remove high voltage capacitor.

- 1) Remove a screw which secure the grounding ring terminal of the H.V.diode and the capacitor holder.
- 2) Remove the H.V. diode from the capacitor holder.
- 3) Reverse the above steps for reassembly.

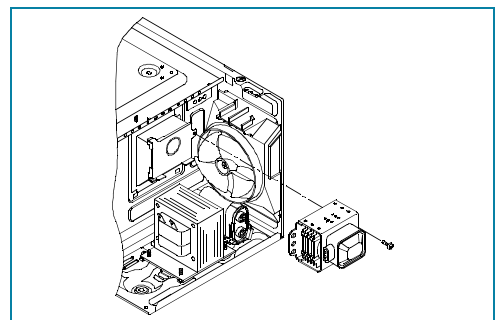


⌘ High voltage circuit wiring



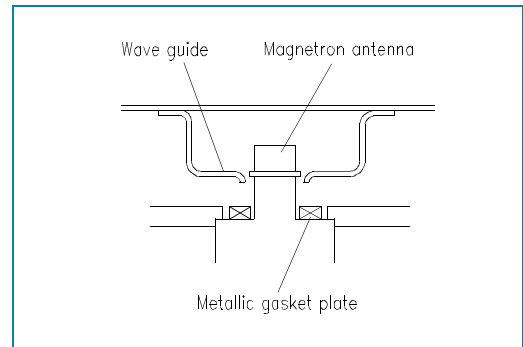
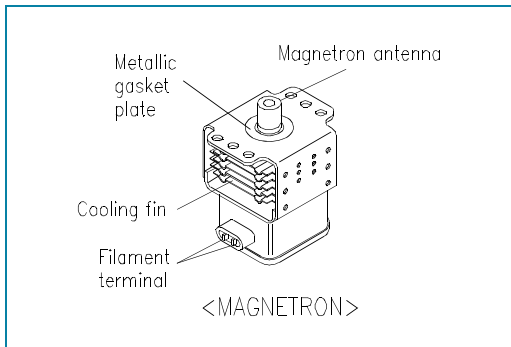
7. To remove magnetron.

- 1) Remove a screw which secure the magnetron.
- 2) Remove the magnetron.
- 3) Reverse the above steps for reassembly.



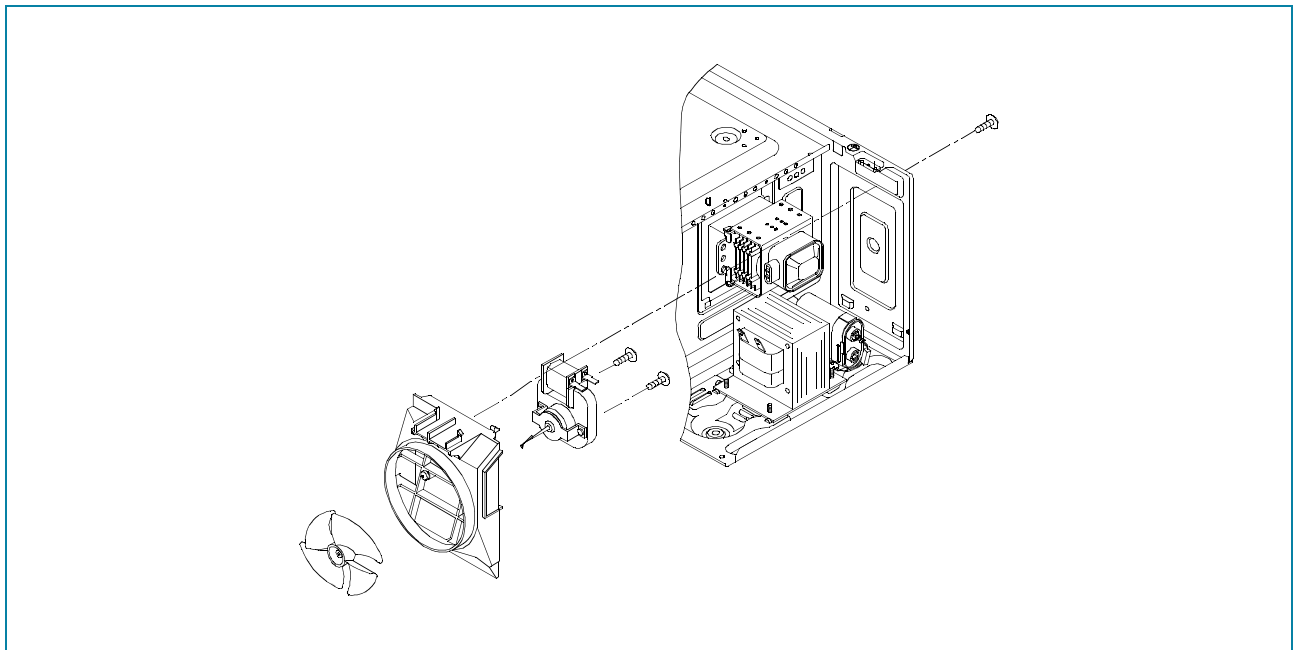
NOTE

Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It shall not exceed $4\text{mW}/\text{cm}^2$ for a fully assembled oven with door normally closed.



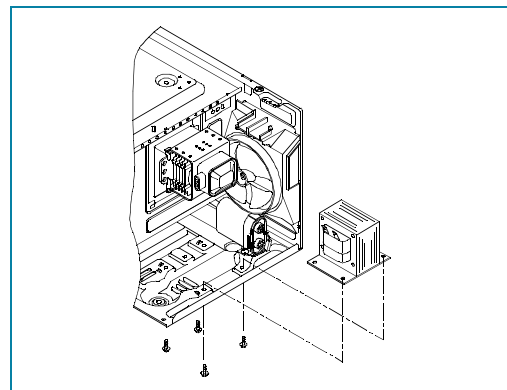
8. To remove wind guide assembly.

- (1) Remove a screw which secure the wind guide assembly.
- (2) Draw forward the wind guide assembly.
- (3) Pull the fan from the motor shaft.
- (4) Remove two screws which secure the motor shaded pole.
- (5) Remove the motor shaded pole.
- (6) Reverse the above steps for reassembly.



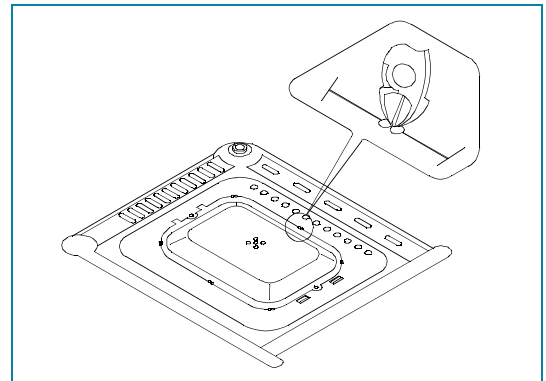
9. To remove H.V.transformer.

- 1) Remove four screws holding the H.V.transformer.
- 2) Remove the H.V.transformer.
- 3) Reverse the above steps for reassembly.

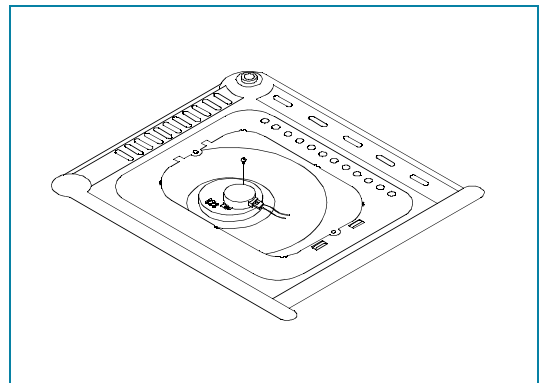


10. To remove tray motor.

- (1) Remove the coupler in the cavity.
- (2) Turn the set upside down.
- (3) Cut the tray motor cover part from the base plate.
- (4) Remove the tray motor cover.

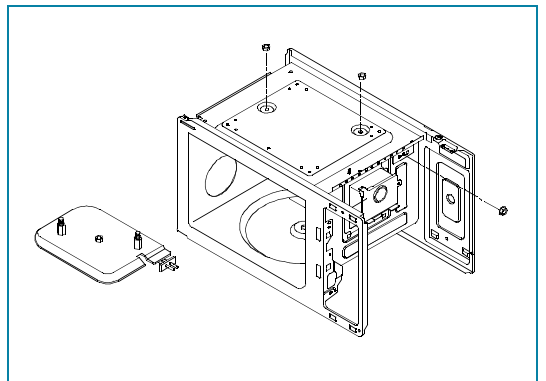


- (5) Remove a screw which secure the tray motor.
- (6) Remove the tray motor.
- (7) Reverse the above steps for reassembly except for securing the tray motor cover with screw.

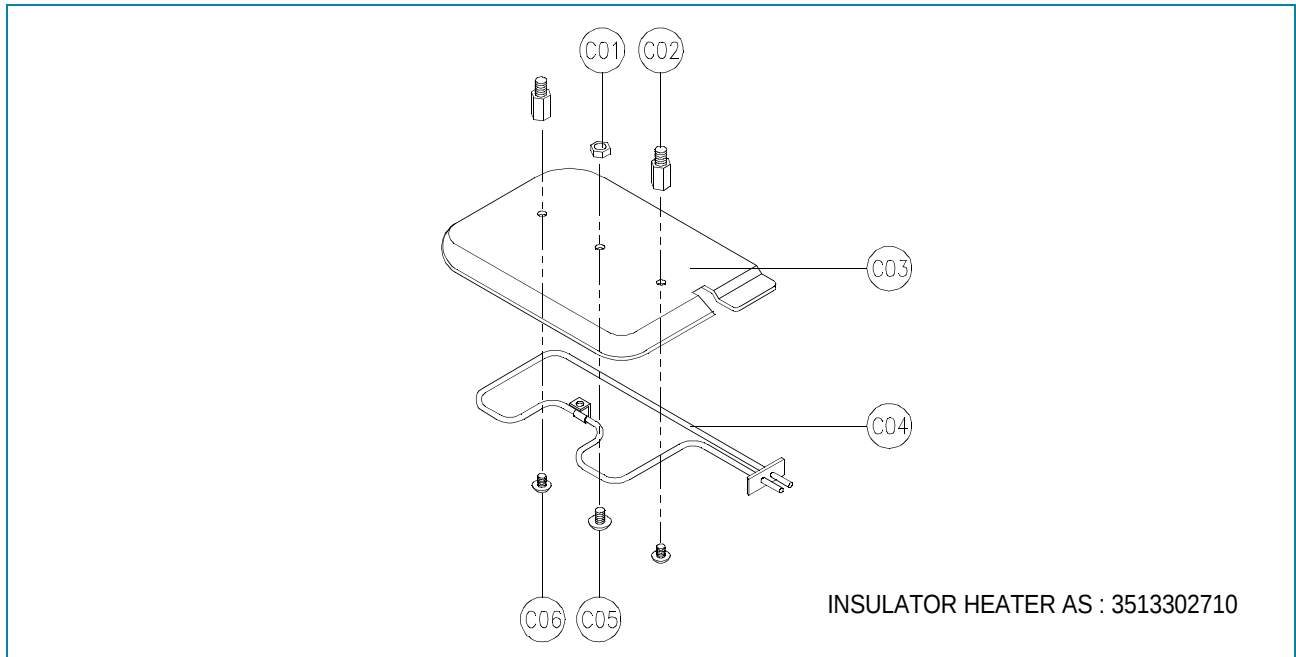


11. To remove heater assembly.

- (1) Remove the three nuts.
- (2) Remove the insulator heater assembly.
- (3) Reverse the above steps for reassembly.



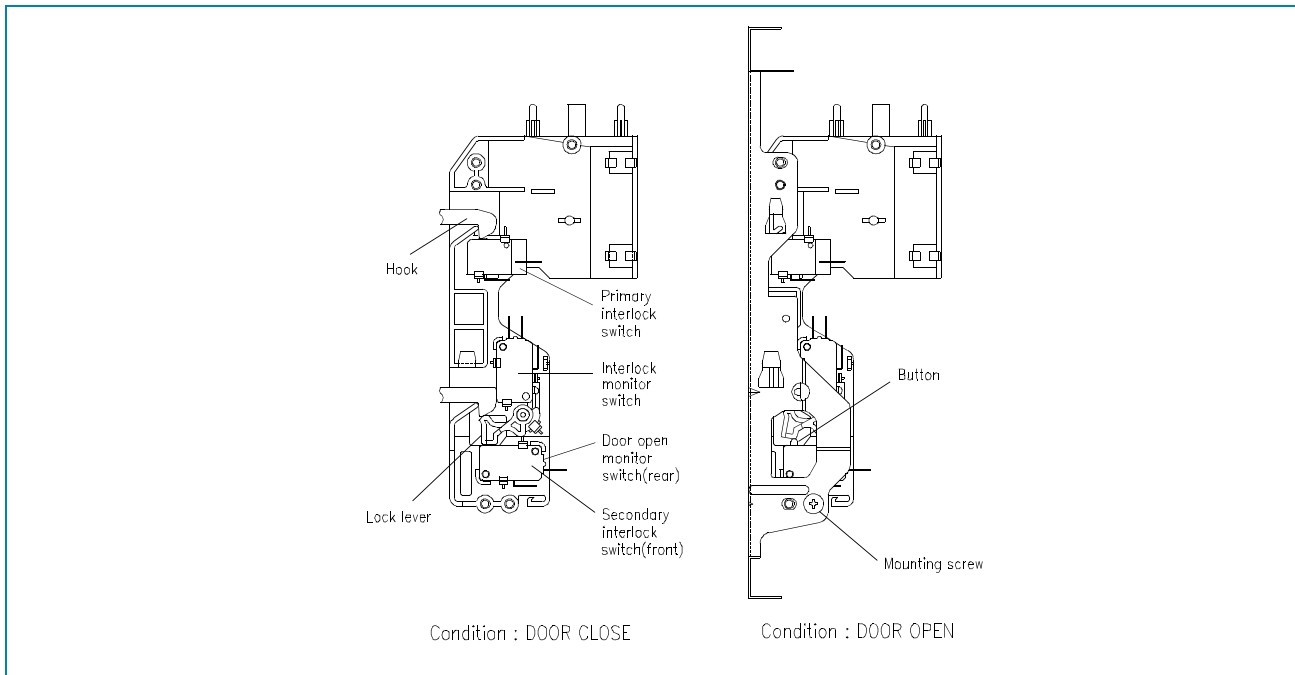
12. To remove heater parts.



REF.NO	PART CODE	PART NAME	DESCRIPTION	QTY	REMARK
C01	7392500008	NUT HEX	6N-2-5 SUS	1	
C02	3515000600	SPACER INSULATOR *I	C3771BD	2	
C03	3513301100	INSULATOR HEATER	SPP T0.8	1	
C04	3512803500	HEATER	220V 1000W 1SOPE47503	1	
C05	7002500613	SCREW MACHINE	TRS 5X6 MFCR	1	
C06	7002400413	SCREW MACHINE	TRS 4X4 MFCR	2	

INTERLOCK MECHANISM AND ADJUSTMENT

The door lock mechanism is a device which has been specially designed to completely eliminate microwave radiation when the door is opened during operation, and thus to perfectly prevent the danger resulting from the leakage of microwave.



(1) Primary interlock switch

When the door is closed, the hook locks the oven door. If the door is not closed properly, the oven will not operate.

When the door is closed, the hook pushes the button of the microswitch. Then the button of the primary interlock switch bring it under ON condition.

(2) Secondary interlock switch and interlock monitor switch

When the door is closed, the hook pushes the lock lever downward. The lock lever presses the button of the interlock monitor switch to bring it under NO condition and presses the button of the secondary interlock switch to bring it under ON condition.

ADJUSTMENT

Interlock monitor switch

When the door is closed, the interlock monitor switch should be changed(NO condition) before other switches are closed.

When the door is opened, the interlock monitor switch should be changed(NC condition) after other switches are opened.

(3) Adjustment steps

- Loosen the one mounting screw.
- Adjust interlock switch assembly position.
- Make sure that lock lever moves smoothly after adjustment is completed.
- Tighten completely one mounting screw.

NOTE

Microwave emission test should be performed after adjusting interlock mechanism. If the microwave emission exceed $4\text{mW}/\text{cm}^2$, readjust interlock mechanism.

TROUBLE SHOOTING GUIDE

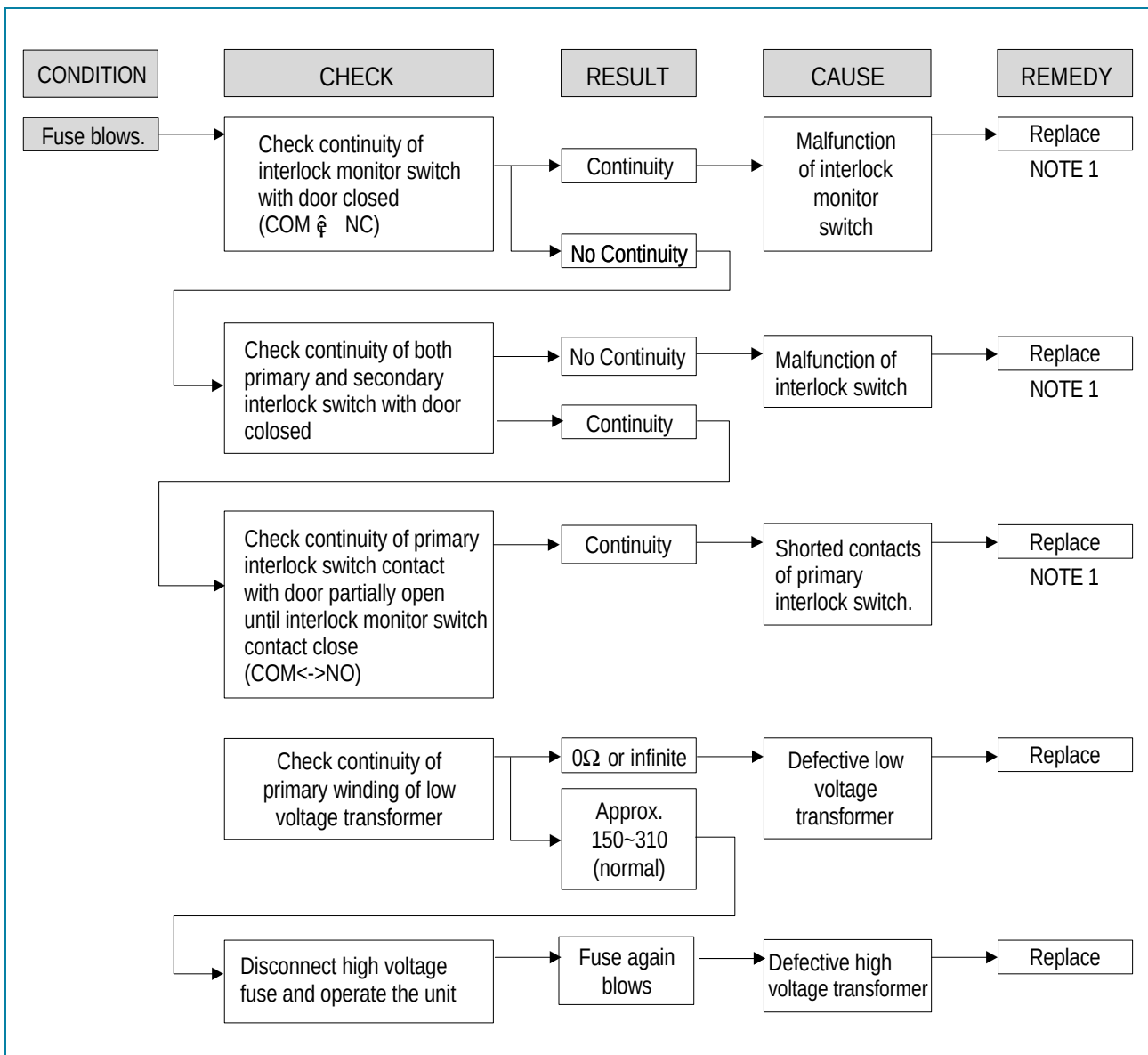
Following the procedure below to check if the oven is defective or not.

- 1) Check earthing before trouble checking.
- 2) Be careful of the high voltage circuit.
- 3) Discharge the high voltage capacitor.
- 4) When checking the continuity of the switches, fuse or high voltage transformer, disconnect one lead wire from these parts and check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.

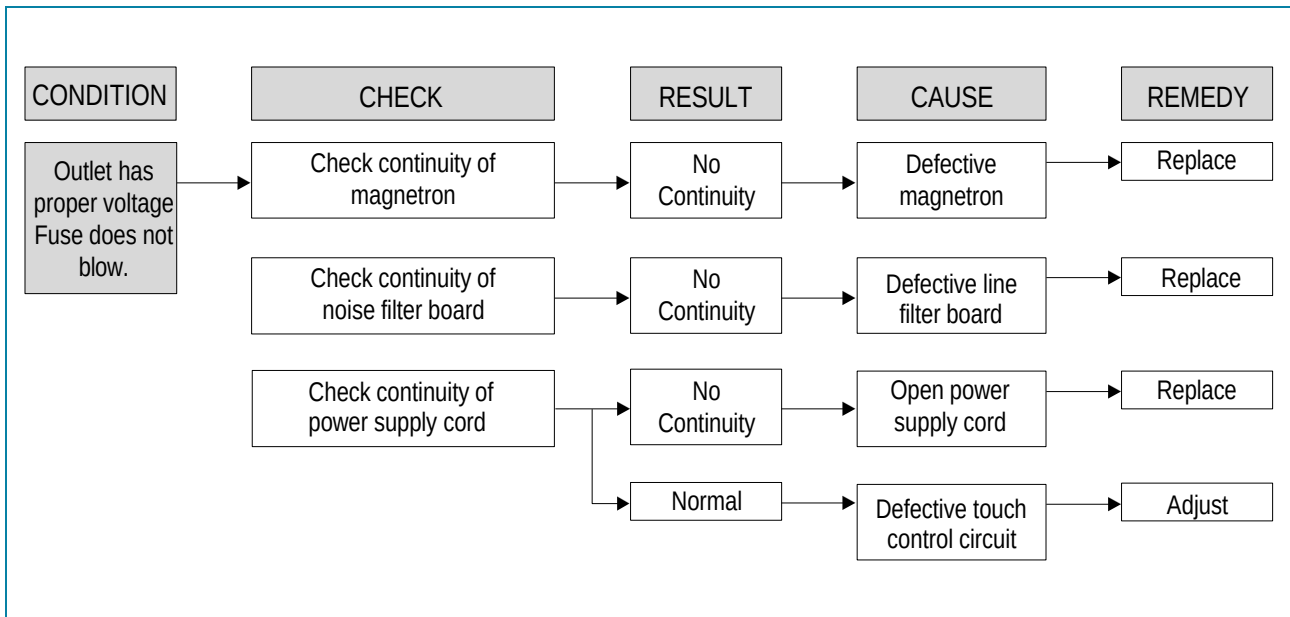
NOTE

When electric parts are checked, be sure the power cord is not inserted the wall outlet.
Check wire harness, wiring and connected of the terminals and power cord before check the parts listed below.

(TROUBLE 1) Oven does not operate at all : any inputs can not be accepted.



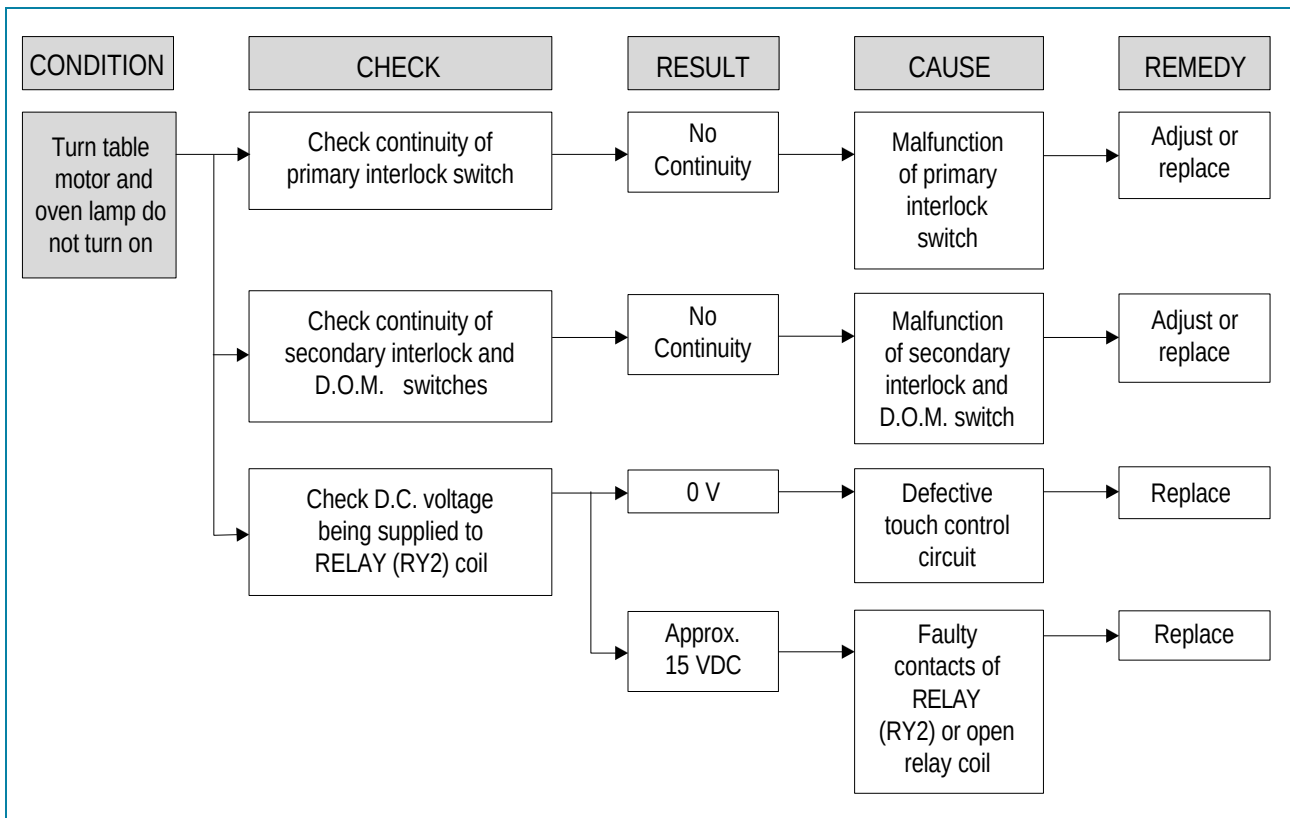
TROUBLE SHOOTING GUIDE



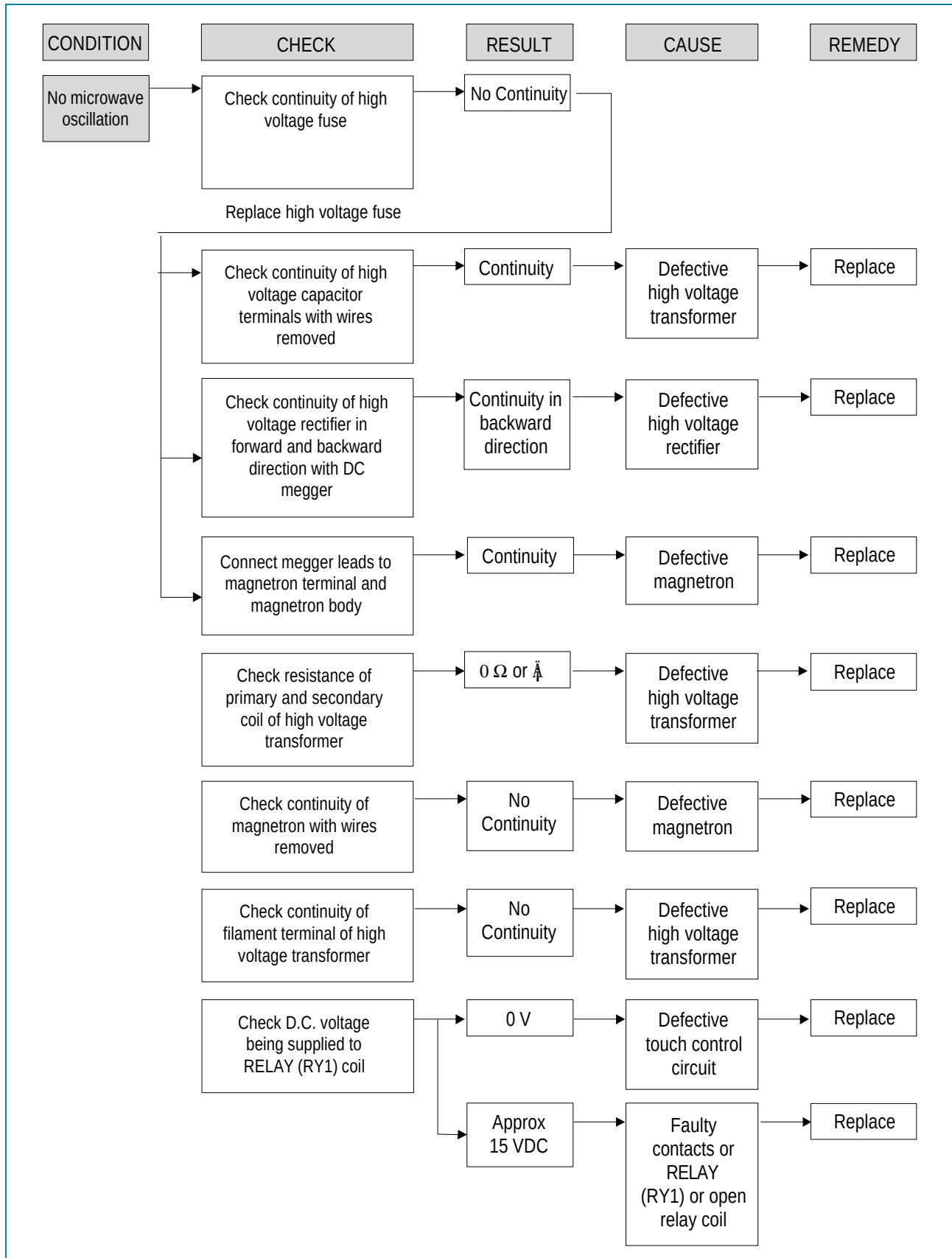
NOTE

All these switches must be replaced at the same time, please refer to "Interlock Mechanism And Adjustment".

(TROUBLE 2) Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start pad is tapped.



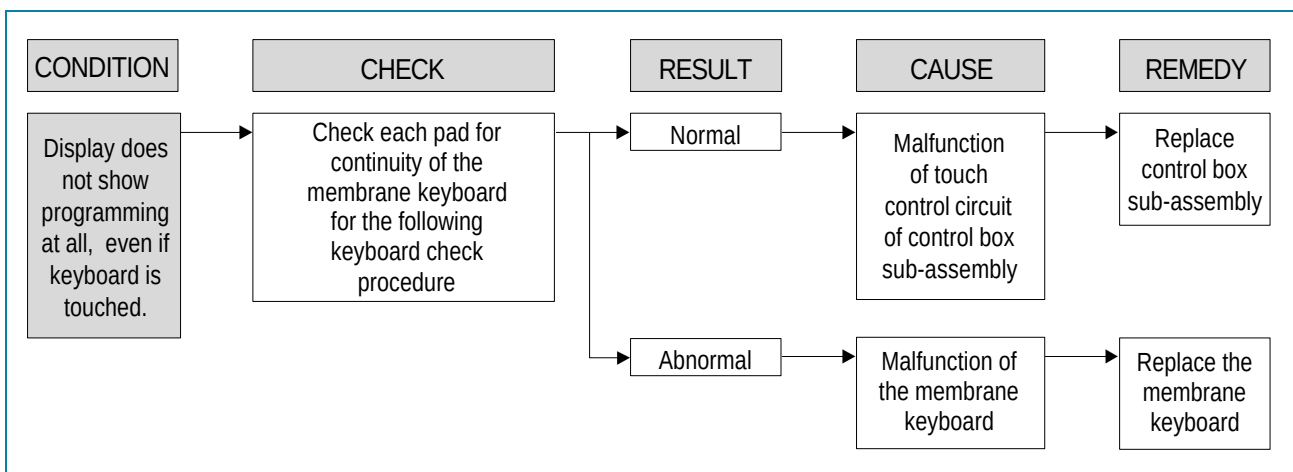
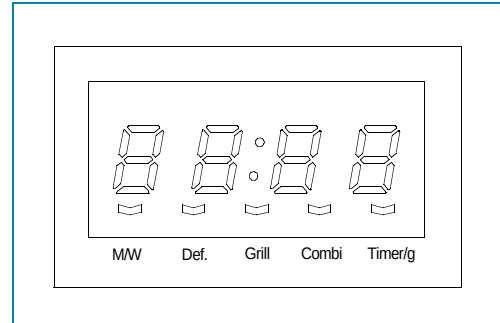
(**TROUBLE 3**) No microwave oscillation even though fan motor rotates.



TROUBLE SHOOTING GUIDE

(TROUBLE 4) The following visual conditions indicate a probable defective touch control circuit or membrane switch assembly

1. Incomplete segments,
 - 1) Segments missing.
 - 2) Partial segments missing.
 - 3) Digit flickering other than normal display slight flickering.
 - 4) “: 0 ”does not display when power is on.
2. A distinct change in the display are not on when they numbers is the display.
3. One or more digits in the display are not on when they should be.
4. Display indicates a number different from one touched.
5. Specific numbers (for example 2 or 3) will not display when the panel is touched.
6. Display does not count down or up with time cooking or clock operation.
7. Oven is programmable and cooks normally but no display shows.
8. Display obviously jumps in time while counting down.
9. Display counts down noticeably too fast while cooking.
10. Display does not show the time of day when clear pad is touched.
11. Oven lamp and turntable motor do not stop although cooking is finished. Check if the RELAY 2 contacts close if they are close, replace touch control circuit.



NOTE

Before following the particular steps listed above in the trouble shooting guide for the membrane keyboard s, failure, please check for the continuity of each wire-harness between the membrane keyboard and P.C.B. assembly.

MEASUREMENT AND TEST

1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT

Microwave output power can be checked by indirectly measuring the temperature rise of a certain amount of water exposed to the microwave as directed below.

PROCEDURE

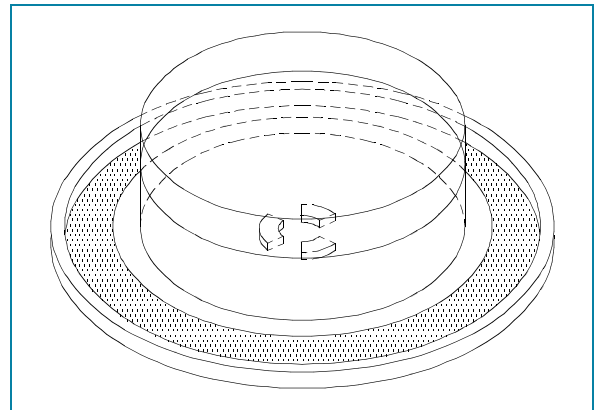
1. Microwave power output measurement is made with the microwave oven supplied at rated voltage and operated at its maximum microwave power setting with a load of $1000 \pm 5\text{cc}$ of potable water.
2. The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
3. The oven and the empty vessel are at ambient temperature prior to the start of the test. The initial temperature of the water is $10 \pm 2^\circ\text{C}$ ($50 \pm 3.6^\circ\text{F}$). It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the shelf, which is in the lowest normal position.
4. Microwave power is switched on.
5. Heating time should be exactly A seconds.
(Refer to table as following)
Heating time is measured while the microwave generator is operating at full power. The filament heat-up time for magnetron is not included.
6. The initial and final temperature of water is selected so that the maximum difference between the ambient and final water temperature is 5K.
7. The microwave power output P in watts is calculated from the following formula:

$$P = 4187 \times \frac{\Delta T}{t}$$

Δ T is difference between initial and ending temperature.

t is the heating time.

The power measured should be B (Refer to SPECIFICATIONS) W $\pm 10.0\%$.



CAUTION

1. Water load should be measured exactly to 1 liters.
2. Input power voltage should be exactly specified voltage (Refer to SPECIFICATIONS).
3. Ambient temperature should be $20 \pm 2^\circ\text{C}$ ($68 \pm 3.6^\circ\text{F}$)

* Heating time for power output:

A (second)	70	64	60	56	52	49	47	44	42	40	38
B (W)	600	650	700	750	800	850	900	950	1000	1050	1100

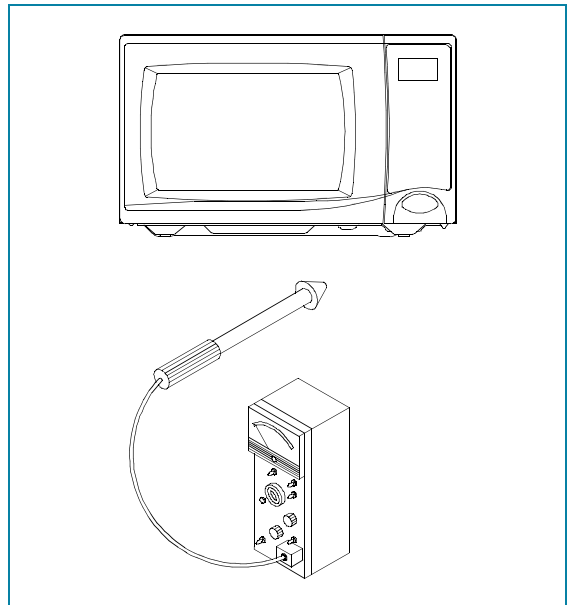
2. MICROWAVE RADIATION TEST

CAUTION

1. Make sure to check the microwave leakage before and after repair of adjustment.
2. Always start measuring of an unknown field to assure safety for operating personnel from microwave energy.
3. Do not place your hands into any suspected microwave radiation field unless the safe density level is known.
4. Care should be taken not to place the eyes in direct line with the source of microwave energy.
5. Slowly approach the unit under test until the radiometer reads an appreciable microwave leakage from the unit under the test.

PROCEDURE

1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer
100°C (212°F).
2. Pour 275cc ± 15 cc of tap water initially at 20 ± 5 °C (68 ± 9 °F) in the 600 cc glass beaker with an inside diameter of approx. 95 mm(3.5 in.).
3. Place it at the center of the tray and set it in a cavity.
4. Close the door and operate the oven.
5. Measure the leakage by using Microwave Energy Survey Meter with dual ranges, set to 2450MHz.
 - 1) Measured radiation leakage must not exceed the value prescribed below. Leakage for a fully assembled oven with door normally closed must be less than 4mW/cm².
 - 2) When measuring the leakage, always use the 5 cm (2 in.) space cone with probe. Hold the probe perpendicular to the cabinet and door. Place the space cone of the probe on the door, cabinet, door seem, door viewing screen, the exhaust air vents and the suction air vents.
 - 3) Measuring should be in a counter-clockwise direction at a rate of 1 in./sec. If the leakage of the cabinet door seem is unknown, move the probe more slowly.
 - 4) When measuring near a corner of the door, keep the probe perpendicular to the areas making sure the probe end at the base of the cone does not get closer than 2 in. from any metal. If it does not, erroneous reading may result.



3. COMPONENT TEST PROCEDURE

- ⌚ High voltage is present at the high voltage terminal of the high voltage transformer during any cooking cycle.
- ⌚ It is neither necessary nor advisable to attempt measurement of the high voltage.
- ⌚ Before touching any oven components or wiring, always unplug the oven from its power source and discharge the capacitor.

1. High voltage transformer

- 1) Remove connections from the transformer terminals and check continuity.
- 2) Normal readings should be as follows :
 - Secondary winding ... Approx. $100\ \Omega \pm 10\%$
 - Filament winding ... Approx. $0\ \Omega$
 - Primary winding ... Approx. $1\ \Omega$

2. High voltage capacitor

- 1) Check continuity of capacitor with meter on the highest OHM scale.
- 2) A normal capacitor will show continuity for a short time, and then indicate $10M\ \Omega$ once the capacitor charged.
- 3) A shorted capacitor will show continuous continuity.
- 4) An open capacitor will show constant $10M\ \Omega$.
- 5) Resistance between each terminal and chassis should be infinite.

3. High voltage diode

- 1) Isolate the diode from the circuit by disconnecting the leads.
- 2) With the ohmmeter set on the highest resistance scale measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diode's resistance will be infinite in one direction and several hundred $k\ \Omega$ in the other direction.

4. Magnetron

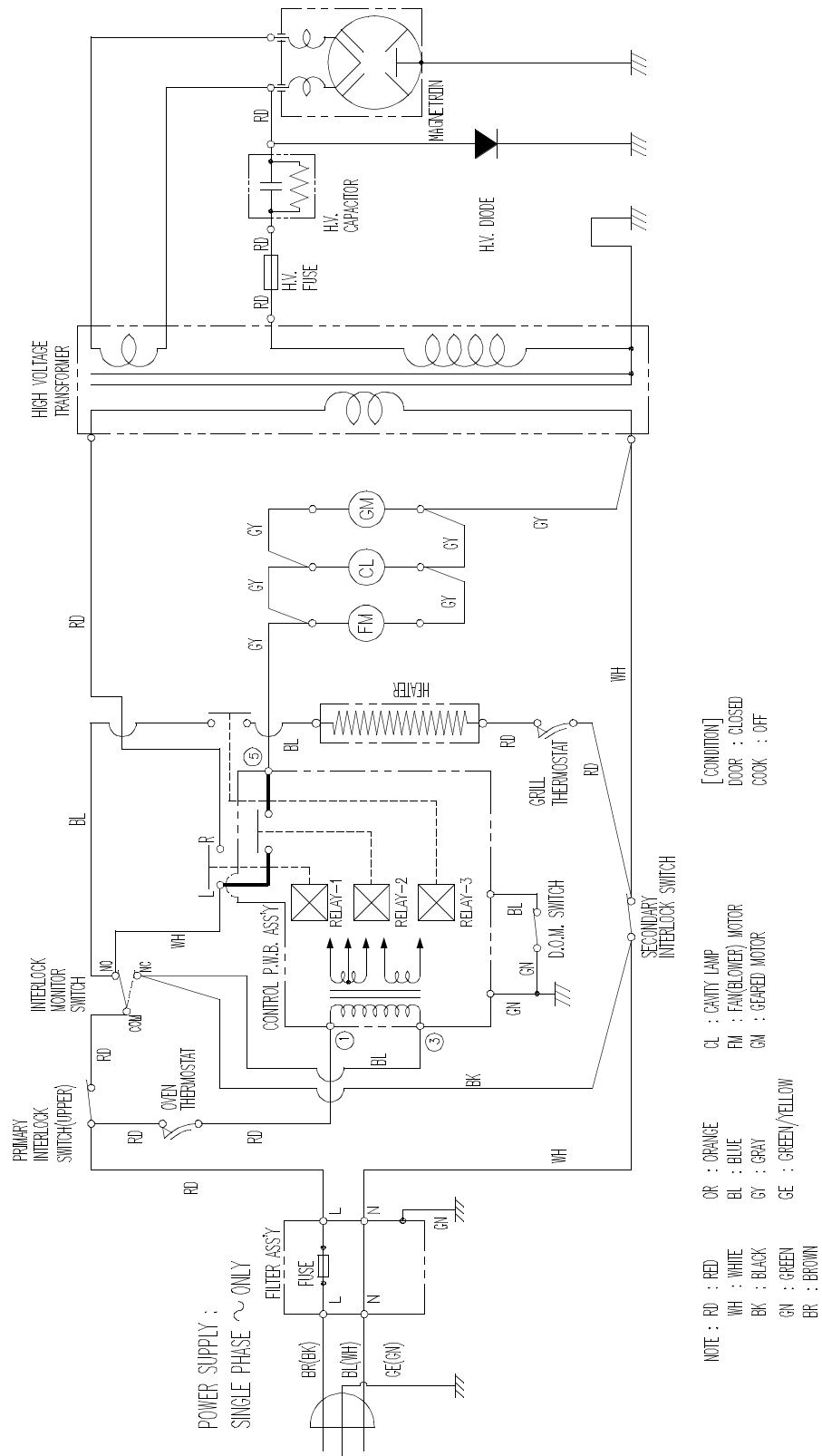
For complete magnetron diagnosis, refer to 'Measurement of the Microwave Power Output.' Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or a shorted magnetron,

- 1) Isolate magnetron from the circuit by disconnecting the leads.
- 2) A continuity check across magnetron filament terminals should indicate $0.1\ \Omega$ or less.
- 3) A continuity check between each filament terminal and magnetron case should read open.

5. Fuse

If the fuse in the primary and monitor switch circuit is blown when the door is opened, check the primary and monitor switch before replacing the blown fuse. In case the fuse is blown by an improper switch operation, replace the defective switch and fuse at the same time. Replace just the fuse if the switches operate normally.

WIRING DIAGRAM



PRINTED CIRCUIT BOARD

1. CIRCUIT CHECK PROCEDURE

1. Low voltage transformer check

The low voltage transformer is located on the P.C.B.

Measuring condition: Input voltage: 220V / Frequency: 60Hz

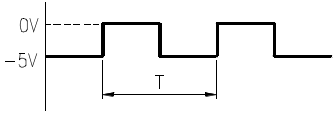
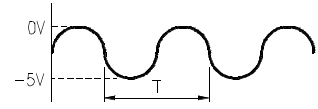
Terminal Voltage	LOAD	NO LOAD
4 - 7	AC 12.6 V	AC 14.7 V

NOTE

1. Refer to Circuit Diagram (point 4).
2. Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.
3. The allowable tolerance of the secondary voltage is within $\pm 5\%$ of nominal voltage.

2. Voltage Check

- Key check point

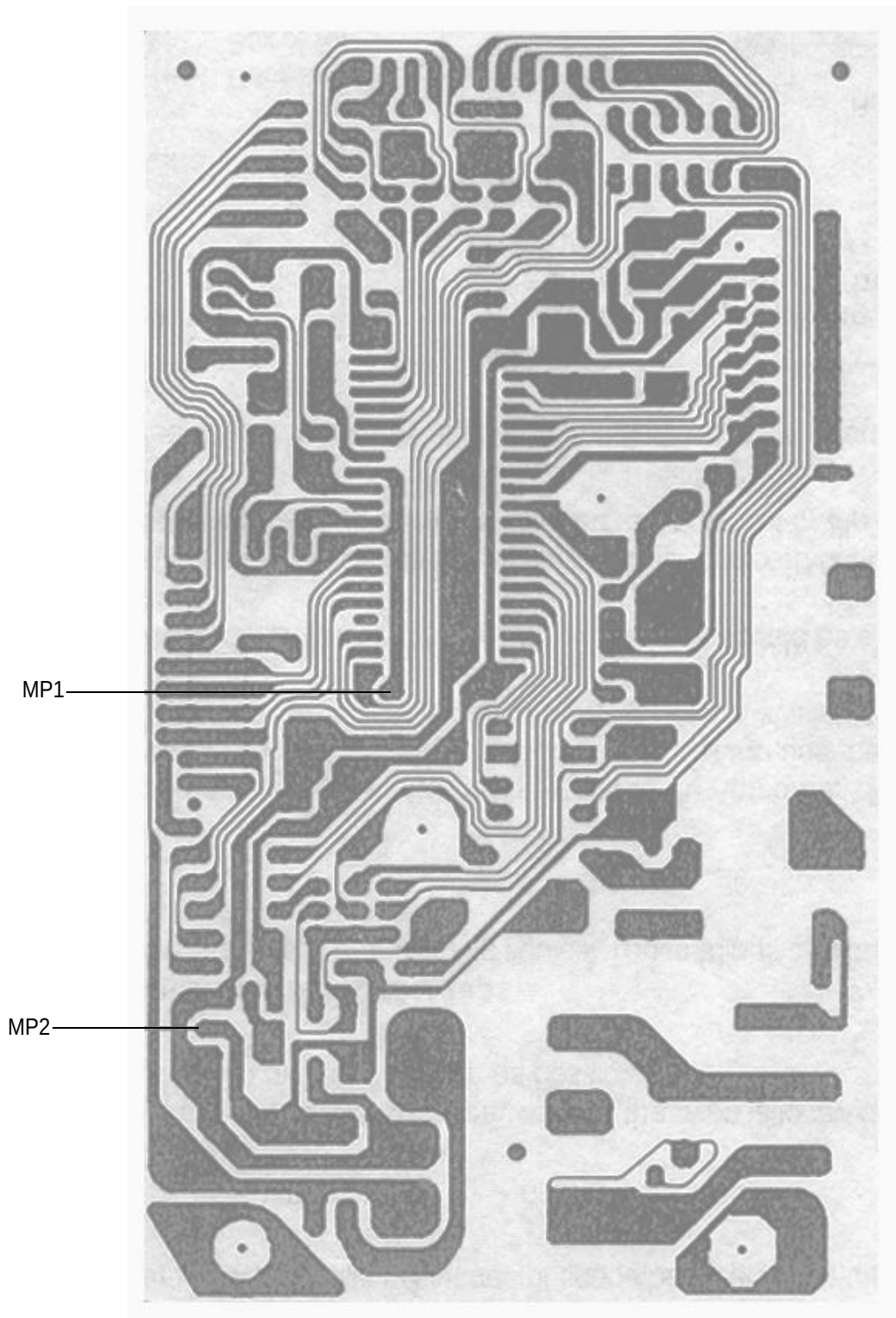
NO	CHECK POINT	REMARK
1	IC1 PIN 2,21,30,34	-5VDC
2	IC1 PIN 35	 T : 16.67ms(60Hz)
3	IC1 PIN 31 OR 32	 T : 250 ns(4MHz)

- Check method

NO	MEASURE POINT	WAVE FORM	REMEDY	REMARK
1	MP1	DC -5V $\pm$ 0.25V	Replace VL1, EC1	NO LOAD
2	MP2	DC -12V $\pm$ 2.0V	Replace EC2, D12,13,14	NO LOAD

NOTE

Each measure point must be measured with GND points.



Measure Point

3. When there is no microwave oscillation

1) When touching **START** pad, oven lamp does not turn on.

Fan motor do not rotate, but cook indicator in display comes on.

* Cause : **RELAY 2** does not operate. ¶ refer to Circuit Diagram (Point 3)

- Check method

STATE \ POINT	A	B
RELAY 2 ON	- 5VDC	GND
RELAY 2 OFF	GND	- 12VDC

2) When touching **START** pad, oven lamp turns on.

Fan motor and turntable rotate and cook indicator in display comes on.

* Cause : **RELAY 1** does not operate. ¶ refer to Circuit Diagram (Point 2)

- Check method

STATE \ POINT	A	B
RELAY 1 ON	-5VDC	GND
RELAY 1 OFF	GND	-12VDC

4. When there is no grill oscillation.

* Cause :RELAY3 does not operate ¶ refer to circuit Diagram (point 6)

- Check method

STATE \ POINT	A	B
RELAY3 ON	-5VDC	GND
RELAY3 OFF	GND	-12VDC

5. When the door is opened during operation, the count down timer does not stop.

¶ refer to Circuit Diagram(Point 1)

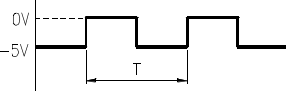
- Check method

STATE \ POINT	A	B
1) DOOR OPEN	OPEN	-5VDC
2) DOOR CLOSED	CLOSE	GND

CHECK NO	METHOD	REMEDY
1	Check the stage(ON,OFF) of the door open monitor switch by resistance measurement.	Replace door open monitor switch.

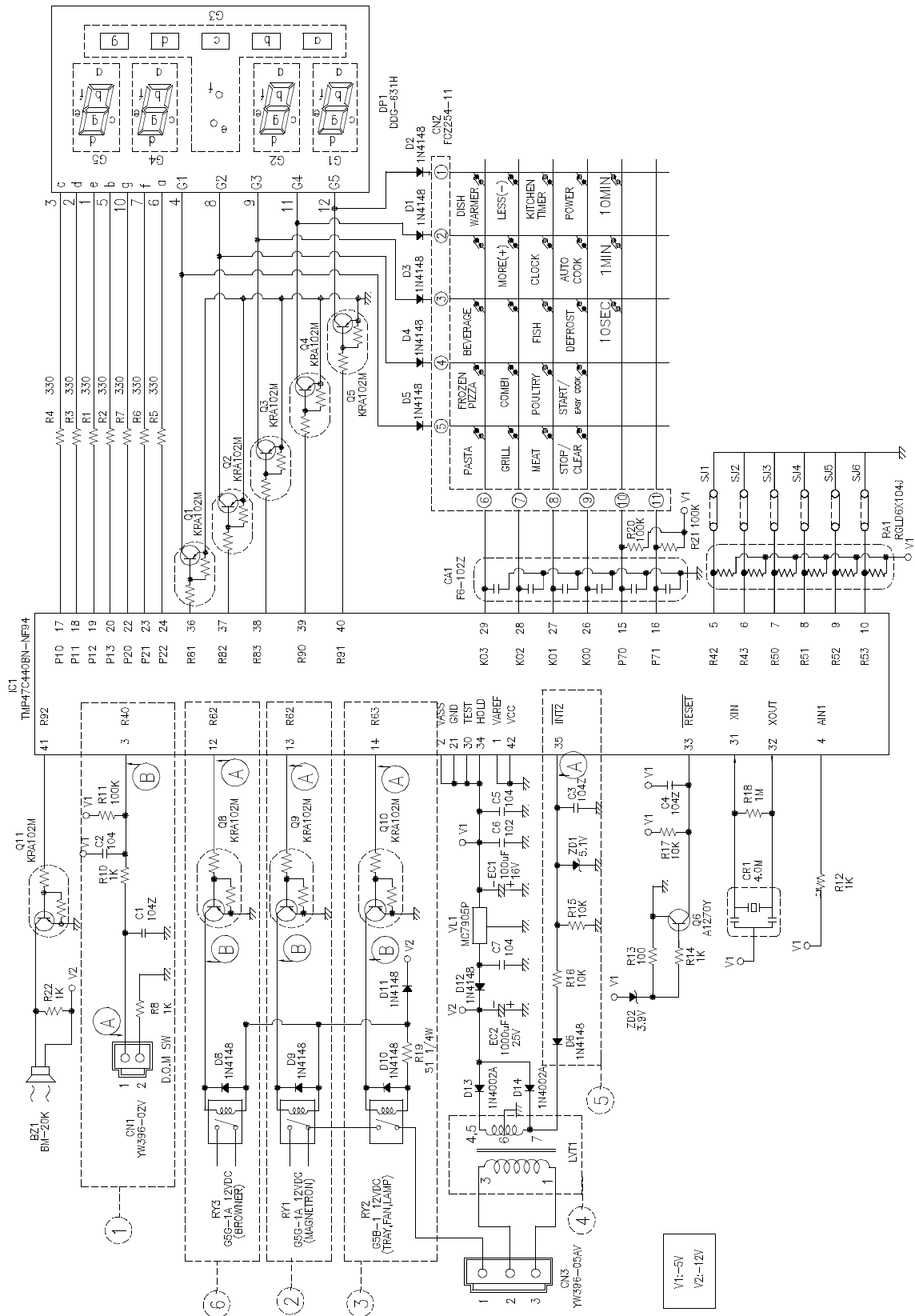
6. When the digital clock does not operate properly.

¶ refer to Circuit Diagram(Point 5)

POINT	WAVE FORM
A	 T: 16.67 ms(60Hz)

¶ If clock does not keep exact time, you must check resistor R15,16, zener diode ZD1.

2. P.C.B. CIRCUIT DIAGRAM



3. P.C.B. LOCATION NO

(1) KOG-370A

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY
1	BUZZER	BZ1	BM-20K	3515600100	1
2	C ARRAY	CA1	7P(6) 102 M 50V	CN6XB-102M	1
3	CAPACITOR ELEC	EC1	16V RSS 100uF	CEXF1C101V	1
4	CAPACITOR ELEC	EC2	25V RSS 1000uF	CEXF1E102V	1
5	CONNECTOR WAFER	CN1	YW396-02AV	3519150520	1
6	CONNECTOR WAFER	CN2	YW396-05AV	3519150510	1
7	CONNECTOR WAFER	CN3	FCZ254-11	441M367160	1
8	DIODE RECTIFY	D1~6,8~12	1N4148	DZN4148---	11
9	DIODE RECTIFY	D13,14	1N4002A	DZN4002A--	2
10	DIODE ZENER	ZD1	MTZ 5.1VB 1/2W	DZTZ5R1B--	1
11	DIODE ZENER	ZD2	MTZ 3.9VB 1/2W	DZTZ3R9B--	1
12	LED DISPLAY	DP1	DDG-631H	DDD631H--	1
13	PCB MAIN	M158	81.5X139.9	3514315410	1
14	R ARRAY	RA1	7P(6) 1/8 100K J	RA-87X104J	1
15	RESISTOR	R1~R7	1/6W 330 5%	RD-AZ331J-	7
16	RESISTOR	R8,10,12,14,22	1/6W 1K 5%	RD-AZ102J-	5
17	RESISTOR	R11,20,21	1/6W 100K 5%	RD-AZ104J-	3
18	RESISTOR	R13	1/6W 100 5%	RD-AZ101J-	1
19	RESISTOR	R15~17	1/6W 10K 5%	RD-AZ103J-	3
20	RESISTOR	R18	1/6W 1M 5%	RD-AZ105J-	1
21	RESISTOR	R19	1/4W 51 5%	RD-4Z510J-	1
22	REGULATOR	VL1	MC7905C	1MC7905C--	1
23	TRANSISTOR	Q1~5,8~11	KRA-102M	TZRA102M--	9
24	TRANSISTOR	Q6	KTA-1270Y	TZTA1270Y-	1
25	TRANS POWER	LVT1	DMR-631FS	5EPV035303	1
26	WIRE COPPER	J1-J21	1/0.52 TIN COATING	85801052GY	21
27	WIRE COPPER	SJ4	1/0.52 TIN COATING	85801052GY	1
28	IC MICOM	IC1	TMP47C440BN-NF94	13GS371GH0	1
29	RESONATOR CERA	CR1	KBR-4.0MSTF	5PKBR40MKS	1
30	SW RELAY	RY1, RY3	G5G-1A DC12V	5SC0101121	2
31	SW RELAY	RY2	G5B-1 DC12V	5SC0101110	1
32	CAPACITOR CERA	C6	102 50V Z AXIAL	CCZB1H102K	1
33	CAPACITOR CERA	C1~5,C7	104 50V Z AXIAL	CCZF1H104Z	6

PRINTED CIRCUIT BOARD

(2) KOG-390A

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY
1	BUZZER	BZ1	BM-20K	3515600100	1
2	C ARRAY	CA1	7P(6) 102 M 50V	CN6XB-102M	1
3	CAPACITOR ELEC	EC1	16V RSS 100uF	CEXF1C101V	1
4	CAPACITOR ELEC	EC2	25V RSS 1000uF	CEXF1E102V	1
5	CONNECTOR WAFER	CN1	YW396-02AV	3519150520	1
6	CONNECTOR WAFER	CN2	YW396-05AV	3519150510	1
7	CONNECTOR WAFER	CN3	FCZ254-11	441M367160	1
8	DIODE RECTIFY	D1~6,8~12	1N4148	DZN4148---	11
9	DIODE RECTIFY	D13,14	1N4002A	DZN4002A--	2
10	DIODE ZENER	ZD1	MTZ 5.1VB 1/2W	DZTZ5R1B--	1
11	DIODE ZENER	ZD2	MTZ 3.9VB 1/2W	DZTZ3R9B--	1
12	LED DISPLAY	DP1	DDG-631H	DDD631H--	1
13	PCB MAIN	M158	81.5X139.9	3514315410	1
14	R ARRAY	RA1	7P(6) 1/8 100K J	RA-87X104J	1
15	RESISTOR	R1~R7	1/6W 330 5%	RD-AZ331J-	7
16	RESISTOR	R8,10,12,14,22	1/6W 1K 5%	RD-AZ102J-	5
17	RESISTOR	R11,20,21	1/6W 100K 5%	RD-AZ104J-	3
18	RESISTOR	R13	1/6W 100 5%	RD-AZ101J-	1
19	RESISTOR	R15~17	1/6W 10K 5%	RD-AZ103J-	3
20	RESISTOR	R18	1/6W 1M 5%	RD-AZ105J-	1
21	RESISTOR	R19	1/4W 51 5%	RD-4Z510J-	1
22	REGULATOR	VL1	MC7905C	1MC7905C--	1
23	TRANSISTOR	Q1~5,8~11	KRA-102M	TZRA102M--	9
24	TRANSISTOR	Q6	KTA-1270Y	TZTA1270Y-	1
25	TRANS POWER	LVT1	DMR-631FS	5EPV035303	1
26	WIRE COPPER	J1-J21	1/0.52 TIN COATING	85801052GY	21
27	WIRE COPPER	SJ1, SJ4	1/0.52 TIN COATING	85801052GY	2
28	IC MICOM	IC1	TMP47C440BN-NF94	13GS371GH0	1
29	RESONATOR CERA	CR1	KBR-4.0MSTF	5PKBR40MKS	1
30	SW RELAY	RY1, RY3	G5G-1A DC12V	5SC0101121	2
31	SW RELAY	RY2	G5B-1 DC12V	5SC0101110	1
32	CAPACITOR CERA	C6	102 50V Z AXIAL	CCZB1H102K	1
33	CAPACITOR CERA	C1~5,C7	104 50V Z AXIAL	CCZF1H104Z	6

EXPLODED VIEW AND PARTS LIST

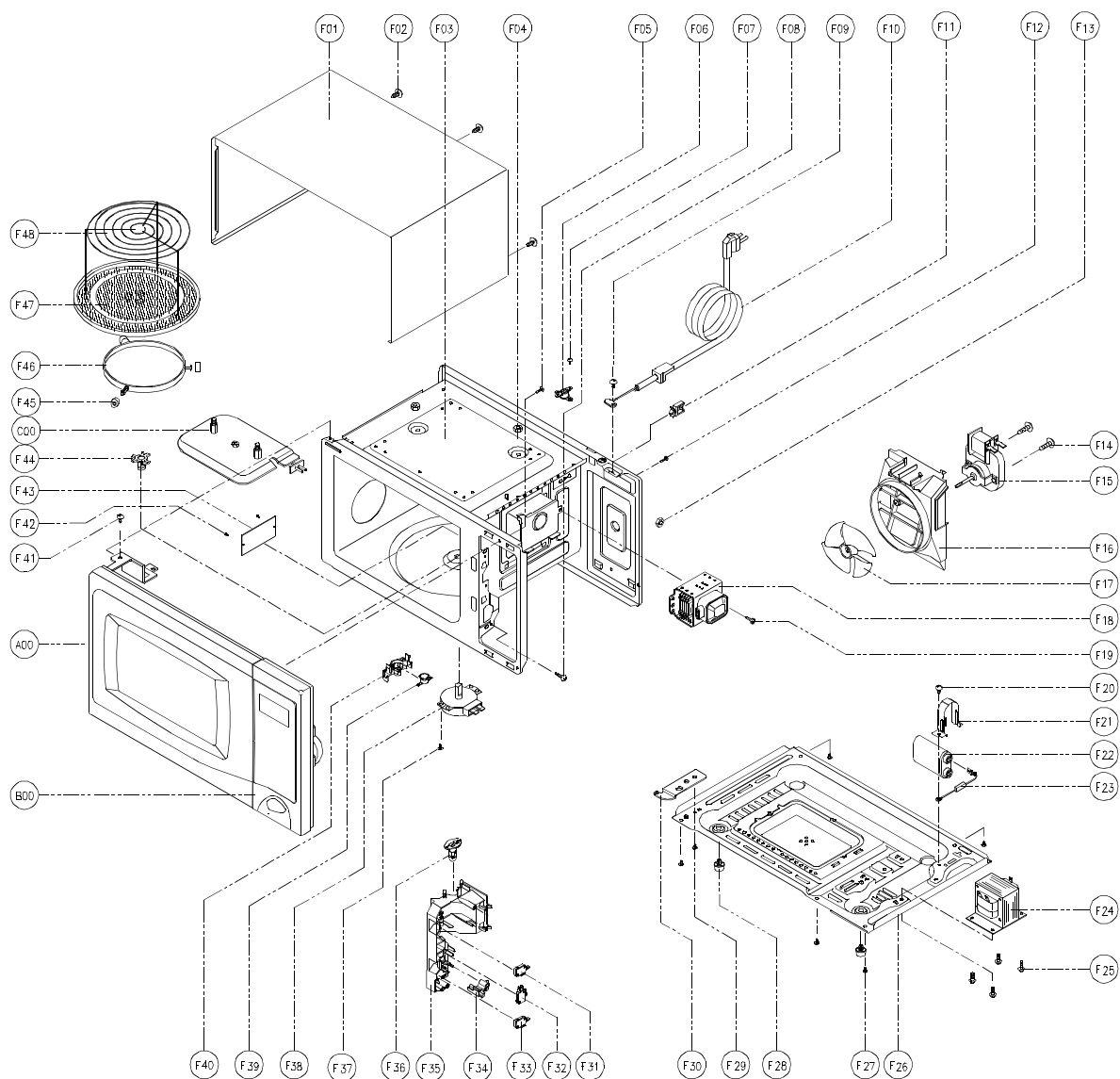
1. DOOR ASSEMBLY

Refer to Disassembly and assembly.

2. CONTROL PANEL ASSEMBLY

Refer to Disassembly and assembly.

3. TOTAL ASSEMBLY



EXPLODED VIEW AND PARTS LIST

(1) KOG-370A

-(R) PART RECOMENDED FOR STOCK

REF NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	(R)
A00	Refer to disassembly and assembly	DOOR AS	Refer to disassembly and assembly	1	
B00	Refer to disassembly and assembly	CONTROL PANEL AS	Refer to disassembly and assembly	1	
C00	Refer to disassembly and assembly	INSULATOR HEATER AS	Refer to disassembly and assembly		
F01	3510801310	CABINET	PCM T0.6 GE	1	
F02	7112401011	TAPPING SCREW	T1 TRS 4*10 MFZN	3	
F03	3516109010	CAVITY WELD AS	CAVITY WELD AS	1	
	3516109610	CAVITY JOINT AS	CAVITY JOINT AS	1	
F04	7S627W50X1	NUT HEX	NUT FLANGE M5X0.8P MFZN	2	
F05	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F06	3518904500	THERMOSTAT	OFF : 100 ON : 90 HN #187	1	
F07	7121300611	SCREW TAPPING	T2S PAN 3X6 MFZN	1	
F08	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F09	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	2	
F10	35113A5CNJ5	CORD POWER AS	3X1.5 40X40 120-RTML	1	
F11	4413A90012	CLAMP POWER CORD	NYLON66	1	
F12	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F13	7112401011	SCREW TAPPING	T1 TRS 4X10 MFZN	1	
F14	7S627W50X1	NUT HEX	NUT FLANGE M5X0.8P MFZN	1	
F15	7121403011	SCREW TAPPING	T2S PAN 4X30 MFZN	2	
F16	3963324300	MOTOR SHADED POLE	220V 25W MW10GA-M01	1	(R)
F17	3512517000	GUIDE WIND	PP	1	
F18	3511800300	FAN	PP+30%GLASS	1	
F19	3518002200	MAGNETRON	2M218H(MF)I	1	(R)
F20	3516004000	SPECIAL SCREW	T2 BOLT FLANGE 5X12 DACRO	1	
F21	7272400811	TAPTITE SCREW	TT3 TRS 4*8 MFZN	1	
F22	3513003200	HOLDER HV CAPACITOR	SECC T0.6	1	
F23	3518301900	CAPACITOR HV	2100VAC 0.84uF #187	1	(R)
F24	3518400400	DIODE HV	HVR-1X-3AB 12KV #187	1	(R)
F25	3518113900	TRANS HV	DY-N80P0-63T	1	(R)
F26	3516003700	SPECIAL SCREW	TT3 HEX 4X8 FLG MFZN	4	
F27	3510311700	BASE	SBHG T0.8	1	
F28	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	5	
F29	3512100900	FOOT	PP DASF-130	2	
F30	7272400811	TAPTITE SCREW	TT3 TRS 4X8 MFZN	1	
F31	3515201101	STOPPER HINGE *U	SCP-1 T2.5	1	
F32	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1	(R)

EXPLODED VIEW AND PARTS LIST

REF NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	®
F33	4415A66910	SW MICRO	VP-531A-OF/SZM-V16-FA-61	1	®
F34	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	2	®
F35	3513702600	LEVER LOCK	POM	1	
F36	3513811700	LOCK	POM	1	
F37	3513601600	LAMP	BL 240V 25W T25 C7A H187	1	
F38	7121400611	SCREW TAPPING	T2S PAN 4X6 MFZN	1	
F39	3966310100	MOTOR SYNCRO	220V 2.5W GM-16-24FD12	1	®
	3966310110	MOTOR SYNCRO	220V 2.5W M2LJ49ZT52	1	®
F40	3518905300	THERMOSTAT	OFF:75 ON:65 H #187 NB	1	
F41	3513003400	HOLDER THERMOSTAT	PBT	1	
F42	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	1	
F43	4078502031	BUTTON LOCKING	PP HONAM A353	2	
F44	3511405100	COVER WAVE GUIDE	MICA T0.35	1	
F45	3517400620	COUPLER	XAREC	1	
F46	3514700710	ROLLER	TEFLON	3	
F47	3512517300	GUIDE ROLLER	PP 5113MF6 A353B	1	
F48	3517203600	TRAY	GLASS	1	
F49	3517206900	TRAY RACK AS	KOG-37150S 110MM	1	

EXPLODED VIEW AND PARTS LIST

(2) KOG-390A

-(R) PART RECOMENDED FOR STOCK

REF NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	(R)
A00	Refer to disassembly and assembly	DOOR AS	Refer to disassembly and assembly	1	
B00	Refer to disassembly and assembly	CONTROL PANEL AS	Refer to disassembly and assembly	1	
C00	3513302710	INSULATOR HEATER AS	Refer to disassembly and assembly	1	
F01	3510801400	CABINET	PCM T0.6	1	
F02	7112401011	TAPPING SCREW	T1 TRS 4*10 MFZN	3	
F03	3516109210	CAVITY WELD AS	CAVITY WELD AS	1	
	3516109710	CAVITY JOINT AS	CAVITY JOINT AS	1	
F04	7S627W50X1	NUT HEX	NUT FLANGE M5X0.8P MFZN	2	
F05	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F06	3518904500	THERMOSTAT	OFF : 100 ON : 90 HN #187	1	
F07	7121300611	SCREW TAPPING	T2S PAN 3X6 MFZN	1	
F08	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F09	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	2	
F10	35113ACNJ5	CORD POWER AS	3X1.5 40X40 120-RTML	1	
F11	4413A90012	CLAMP POWER CORD	NYLON66	1	
F12	7122401211	SCREW TAPPING	T2S TRS 4*12 MFZN	1	
F13	7112401011	SCREW TAPPING	T1 TRS 4X10 MFZN	1	
F14	7S627W50X1	NUT HEX	NUT FLANGE M5X0.8P MFZN	1	
F15	7121403011	SCREW TAPPING	T2S PAN 4X30 MFZN	2	
F16	3963324300	MOTOR SHADED POLE	220V 25W MW10GA-M01	1	(R)
F17	3512517000	GUIDE WIND	PP	1	
F18	3511800300	FAN	PP+30%GLASS	1	
F19	3518002200	MAGNETRON	2M218H(MF)I	1	(R)
F20	3516004000	SPECIAL SCREW	T2 BOLT FLANGE 5X12 DACRO	1	
F21	7272400811	TAPTITE SCREW	TT3 TRS 4*8 MFZN	1	
F22	3513003200	HOLDER HV CAPACITOR	SECC T0.6	1	
F23	3518301900	CAPACITOR HV	2100VAC 0.84uF #187	1	(R)
F24	3518400400	DIODE HV	HVR-1X-3AB 12KV #187	1	(R)
F25	3518115600	TRANS HV	DW-N90P0-86T B	1	(R)
F26	3516003700	SPECIAL SCREW	TT3 HEX 4X8 FLG MFZN	4	
F27	3510311900	BASE	SBHG T0.8	1	
F28	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	5	
F29	3512100900	FOOT	PP DASF-130	2	
F30	7272400811	TAPTITE SCREW	TT3 TRS 4X8 MFZN	1	
F31	3515201101	STOPPER HINGE *U	SCP-1 T2.5	1	
F32	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1	(R)

EXPLODED VIEW AND PARTS LIST

REF NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	®
F33	4415A66910	SW MICRO	VP-531A-OF/SZM-V16-FA-61	1	®
F34	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	2	®
F35	3513702600	LEVER LOCK	POM	1	
F36	3513811700	LOCK	POM	1	
F37	3513601600	LAMP	BL 240V 25W T25 C7A H187	1	
F38	7121400611	SCREW TAPPING	T2S PAN 4X6 MFZN	1	
F39	3966310100	MOTOR SYNCRO	220V 2.5W GM-16-24FD12	1	®
	3966310110	MOTOR SYNCRO	220V 2.5W M2LJ49ZT52	1	®
F40	3518905300	THERMOSTAT	OFF:75 ON:65 H #187 NB	1	
F41	3513003400	HOLDER THERMOSTAT	PBT	1	
F42	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	1	
F43	4078502031	BUTTON LOCKING	PP HONAM A353	2	
F44	3511405100	COVER WAVE GUIDE	MICA T0.35	1	
F45	4418D10032	COUPLER	PPS	1	
F46	3514700900	ROLLER	TEFLON	3	
F47	3512509200	GUIDE ROLLER	PP	1	
F48	3517203500	TRAY	GLASS	1	
F49	3517206900	TRAY RACK AS	KOG-37150S 110MM	1	

DAEWOO

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